370

JUN 1 3 1932

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

June, 1932

EDUCATION

COOPERATIVE OBJECTIVES OF INDUSTRIAL ARTS EDUCATION
By DEAN M. SCHWEICKHARD

ERRONEOUS IDEAS ABOUT INDUSTRIAL ARTS
By THOMAS DIAMOND

INDUSTRIAL ARTS IN LARGE CITY HIGH SCHOOLS
By ALBERT G. BAUERSFELD

PROGRESS AND ACCOMPLISHMENT IN MANUAL ARTS TEACHING
By W. E. ROBERTS

THE GENERAL SHOP
By LOUIS V. NEWKIRK

INDUSTRIAL ARTS PROBLEMS NEEDING STUDY
By WILLIAM E. WARNER

INDUSTRIAL ARTS TEACHER'S RESPONSIBILITY
By HOMER J. SMITH

EDUCATION

EDITOR-IN-CHIEF

HERBERT BLAIR
Professor of School Administration
Boston University School of Education

ASSOCIATE EDITORS

ARITHMETIC
GUY M. WILSON
Professor of Education
Boston University

ART
ROYAL BAILEY FARNUM
Director
Rhode Island School of Design

CIVICS
FRANK REXFORD
Director of Civics
New York City

COMMERCIAL
FREDERICK G. NICHOLS
Professor of Commercial Education
Harvard Univ. School of Education

CREATIVE WRITING
TRENTWELL MASON WHITE
Lecturer in Creative Writing
Breadloaf School of English
Middlebury College

ELEMENTARY EDUCATION
AMY BRONSKY
Assistant Professor of Elementary Education, Ohio State University

ENGLISH
EVERETT GETCHELL
Professor of Education
Boston University

EXTRA CURRICULAR ACTIVITIES
EDWARD J. EATON
Professor of Education
Boston University

GEOGRAPHY
DOUGLAS C. RIDGLEY
Professor of Geography in Education
Clark University

GUIDANCE
JESSE B. DAVIS
Professor of Education
Boston University

HISTORY
DANIEL C. KNOWLTON
Professor of Education
New York University

HOME ECONOMICS
GLADYS B. JONES
Director, Garland School of Home Making, Boston

HEALTH EDUCATION
MABEL C. BRAGG
Associate Professor of Education
Boston University

INDUSTRIAL ARTS
ARTHUR B. MAYS
Professor of Industrial Education
University of Illinois

MEASUREMENT
ERNEST W. TIEGS
Dean of University College
University of Southern California

PHYSICAL EDUCATION
FREDERICK RAND ROGERS
Dean of Physical Education and Health
Boston University

PUBLIC RELATIONS
M. R. KEYWORTH
Superintendent of Schools
Hamtramck, Michigan

SCIENCE
LYMAN NEWELL
Professor of Chemistry
Boston University

SECONDARY EDUCATION
FREDERICK E. BOLTON
Professor of Education
University of Washington

SUPERVISION
ERNEST O. MELBY
Professor of Education
Northwestern University

VISUAL EDUCATION
F. DEAN McCLUSKY
President
National Academy of Visual Instruction

VOCATIONAL EDUCATION
LEWIS A. WILSON
Assistant Commissioner for Vocational Education, New York

Address all communications to the office of the publishers

THE PALMER COMPANY, Publishers

120 Boylston Street **Boston, Massachusetts**

NEWCOMB & GAUSS CO., PRINTERS, SALEM, MASS.

EDUCATION

Vol. LII JUNE, 1932 No. 10

COMPARATIVE OBJECTIVES OF INDUSTRIAL ARTS EDUCATION

DEAN M. SCHWEICKHARD

ASSISTANT SUPERINTENDENT OF SCHOOLS
MINNEAPOLIS, MINNESOTA

This is a lucid analysis of the functions of education at the different stages of child life and of the definite part industrial arts plays at each stage. Few men in the United States are as well qualified to discuss this subject as is the author.

WITH an entire issue of a magazine such as this devoted to the consideration of various aspects of education and training in industrial arts, there is danger that the reader may be bored by repetitive attempts to define the field or explain its status. On the other hand, the multi-sided treatment of industrial arts in a publication so constantly devoted to education may lead to the misapprehension that the industrial arts are school subjects and nothing more.

As a matter of fact the industrial arts are the human activities arising or developing from the necessity of performing certain operations upon the natural resources of the earth in order to make them more fit for human use or consumption. These activities and operations have to do with securing the raw materials, handling, transporting, treating, and transforming the shape, nature and appearance of them. They involve all phases of industrial activity, and so demand the vocational service of large masses of adult workers, and attract the interest of children who are being educated to become future citizens.

Since industrial activities, or the activities attendant upon the furtherance of the industrial arts of the world, are so closely bound up with so many phases of human life, from both the producing and consuming standpoint, it seems reasonable that some attention should be given them in the public schools. However, it should be understood clearly by educators and others, that the educational enterprises in the schools based upon or related to industrial activities outside, constitute conscientious efforts to educate boys and girls about industry, or prepare them for intelligent entrance and capable participation in it.

The question is often asked, what should industrial arts accomplish in the school, or what should be its results? What is it there for, and how shall we tell whether or not it is worth while? Such questions as these can not be answered with a single answer for all parts of the school system, since industrial arts, as a school subject, serves different purposes and

performs different functions in successive stages of school life.

For purposes of this consideration, the school system may be looked upon as having three distinct stages: (1) the elementary school, (2) the intermediate school, and (3) the school of advanced or specialized education. These divisions may not appear to fit the commonly known school organization, but they are intended to correspond to stages of pupil development, rather than artificial divisions of the school. In other words they are presented as stages of education rather than years of school life. They may correspond in some instances to certain school divisions, but will be found to vary considerably in others, as the following consideration should reveal.

I. Elementary Education

By common consent it has been agreed long since that the child should emerge from the elementary school period with a thorough knowledge and command of the fundamental processes, which in more familiar terms means reading, writing, and the use of numbers. Under modern civic and social standards such a limited preparation as that seems like a very meager equipment for a prospective citizen and member of society, be it political, economic or industrial. During the period of elementary education, the serviceable school of the present day must do much beside instil a command of the fundamental processes, in the way of developing desirable character traits, and establishing valuable channels of performance.

Among the first of these extra things the child must have in order to be a more successful member of the school group, and of the larger group outside school are right *attitudes.* Often a child of normal intelligence becomes a problem in school, and no other explanation can be given than that his attitude is wrong. It may be that the traditional presentation of subject matter has failed to stimulate a worthy desire within him. Working with materials and the re-creation in school of actual life situations may prove to be the very saving force for such a child.

When once desirable attitudes have been established, they serve as a foundation upon which to build other fundamental traits. Perhaps the second object to be sought, is the development of certain *appreciations,* and nothing can contribute toward such an end as much as actual participation in the manipulative phases of industrial arts activities in the elementary school. There are three ways in which improved appreciations may result from this sort of work. (1) Through study about materials and in handling and using them, the child derives an ever-increasing appreciation of the fundamental values involved in quality and appearance. (2) The problems and perplexities which have to be met in the planning and execution of construction work, combined with the physical exertion necessary in many instances, help one to appreciate the fact that accomplishment and progress in the industrial world are the result of continued struggle and constructive effort. (3) Much of the elementary school industrial arts work involves cooperative performance on the part of several pupils thus giving them an appreciation of the necessity for proper working relations among people in the actual working world.

In the third place, elementary school industrial arts may contribute very positively toward the formation of desirable habits, which become established much more perfectly in the brain control centers through physical or manipulative stimulation. (1) Habits of neatness, industry, and accuracy may be improved directly by working carefully with material things. (2) Conservation, which is mostly the demonstration of a habit, may be incorporated in the use of materials for construction purposes. (3) The habit of careful thinking, involved in planning and doing construction work, may be seen to improve with continued application to varying situations. (4) Even though the mastery of technical processes is not a primary objective in this part of school life, there are certain beginnings which can be made in that direction, even if they amount to little more than acquiring the habit of using properly any device which is utilized.

Closely related to habits and perhaps a direct outgrowth of them, are *skills* to be acquired. True the skills to be expected here are not the highly developed or specialized ones to be sought later. Skill is developed in the use of numbers as well as in letter and word combinations, and in penmanship. Likewise it should be sought in all manipulative operations where future automatic performance will relieve the mind from conscious direction of the hand in order that it may be devoted to or utilized in grasping new situations. The extent and variety of skills will need to be determined by the manipulative needs of the child and the work as he proceeds.

Ideals may seem intangible, but nevertheless they are the things that spur us on toward the goal of high attainment, and help us to keep our balance amid disturbing or distracting influences. Much may be said in school about ideals, but they can often be embodied more perfectly in actual performance. Giving, sharing, and cooperating in the use of materials, and material things will go much farther toward instilling ideals of social relationship, than much preaching. Furthermore ideals of perfection can be detected easily in the completion of a material project, and can be preserved in semi-permanent form as continual reminders.

A sixth objective of industrial arts in the elementary school has to do with the *knowledge* to be acquired. A little thought upon the education in the elementary school will reveal a wealth of informational material having to do with industrial life, modes of living, getting food, providing shelter, making clothing, and like problems common to humanity the world over. In these connections industrial work deserves a large portion of the time of the elementary school years, and should result in the acquisition of fundamental knowledge about the sources and treatment of natural resources. Likewise, it should result in simple knowledge of the manipulative and mechanical processes involved in the industries studied and the illustrative projects attempted in the school.

The six-fold presentation given above may seem like a statement of general objectives for the whole of the elementary school. Actually, the work of that stage of school life should be unified to such an extent that no one field stands out separately from the

rest. Neither can the objectives of education there be broken up into separate fields. Younger children, however, are most interested in what they can see, and feel and do. Industrial arts offers a wealth of opportunity for the stimulation of such interest, in the education of children in the fundamental affairs of life, and in accomplishing the development of desirable attitudes, appreciations, habits, skills, ideals and knowledge.

II. Intermediate Education

Prominent among the educational developments of the last two decades has been the special attention given to appropriate education for adolescents. The fundamental assumption in the planning of education which would be particularly appropriate for children in the transitional period of life has been the organization of a special school unit, or stage of education, distinct from those which precede or follow. This unit or stage is commonly known as the junior high school, and usually includes the seventh and eighth years of school life or the seventh, eighth and ninth. With the increasing tendency for the local school system to take on two more years, making fourteen in all, this second stage may very probably come to extend through the tenth grade, making a 6–4–4 arrangement. Under any of the several combinations, however, the second stage is an intermediate one, in that it provides opportunity for transition between the other two.

The school, during this period must still seek to improve the pupils' *command of the fundamental processes.* In the exploratory and related reading valuable and constructive results can be accomplished toward the end of enabling the pupil to read more rapidly and understandingly. The mathematical calculations required in various phases of shop and laboratory work provide very practical opportunity for continued training in mathematics of such a nature that the need is easily recognized. Writing, likewise is utilized in the preparation of notes and reports. By these means a thorough command of the fundamental processes becomes more apparent to the pupil because of the application to the practical situation.

During this period, also, the cultivation of individual bents becomes a prominent factor, for avocational application as well as for possible later value in some vocational connection. It may be that the chief concern over the adolescent boy in his spare time is to keep him out of mischief by providing some opportunity to engage in activities which interest him. The various fields of industrial arts provide abundant opportunity for the profitable use of leisure time, thus accomplishing the desired result with the adolescent youth, and at the same time providing enjoyment for the present and the future.

In contrast to the indirect objectives for industrial arts in intermediate education there are three which may be considered much more direct, because they are accomplished almost entirely by the industrial arts work. Out of the large number of industrial occupations six typical fields can be chosen as representative. These fields are woodworking, mechanical drawing, electricity, metal working, printing, and general mechanics.

Each of the above-mentioned typical fields carries with it the necessity for acquiring certain fundamental

manipulative skills. These skills are necessary in the every-day conduct of the work, and serve to constitute a beginning in more specialized training later, depending upon the choice of the individual. Accordingly they must be technologically correct, though elementary.

A second major result of industrial arts in intermediate education must be the acquisition of *industrial knowledge.* This knowledge has to do with occupations, processes, and materials, and serves to help the pupil do the work in hand more intelligently, as well as to look ahead and map out his subsequent career with a better understanding. Intermediate school shop work without this element is sadly deficient and obsolete.

Finally there should be developed from this work what we choose to call *domestic intelligence,* or the ability to understand and remedy difficulties in the variety of mechanical situations arising about the average home. The main purpose in developing the ability to solve intelligently mechanical problems about the home, is partly for the utilitarian value, but still more for the humanitarian effect on the individual and the family.

During the intermediate stage of education then industrial arts training should supplement other educational subjects in bringing about: (1) better command of the fundamental processes, (2) the cultivation of individual bents, and (3) the development of desirable character traits; and should directly result in the acquisition of: (1) mechanical skill, (2) industrial knowledge; and (3) domestic intelligence.

III. Advanced Education

Beyond the intermediate stage, all education may be considered advanced, as far as industrial arts content is concerned, because of the fact that it involves specific training for specific purposes, usually vocational.

The chief justification for industrial arts in the senior high school is the preparation it provides for *entrance to technical college courses,* although it may have the secondary objective of general or *leisure time training.* A third possible objective may be that of *trade entrance,* for the boy who has chosen this as a substitute for the trade school.

In the day trade school industrial arts work has one objective, namely to train industrial workers, even though the purposes of the entire school include such other things as the preparation for good citizenship. The part-time school may include industrial arts training for the purpose of *upgrading* or opening the way for promotion to the juvenile worker, at the same time offering continuation education of a more general nature, and broader value. Industrial arts courses in the evening school, obviously have the one objective of retraining industrial or trades people for new enterprises and undertaking in industry.

With this presentation it is hoped that a little light may be thrown upon the question of comparative objectives of industrial arts in the three stages of education, with no attempt to deal with the many estimable values arising from other branches of educational endeavor carried on coordinately with industrial arts.

"INDUSTRIAL ARTS—AN IMPORTANT FACTOR IN GENERAL EDUCATION"

C. L. JORDAN

ASSISTANT PRINCIPAL IN CHARGE OF INDUSTRIAL EDUCATION
WAUKEGAN TOWNSHIP SECONDARY SCHOOLS
WAUKEGAN, ILLINOIS

This presentation of the significance of industrial arts as a phase of general education emphasizes an aspect of the subject often misunderstood by teachers and other students of education.

THE industrial arts course in a modern school is offered as a part of the general education program. Whatever the subject headings may be,—woodworking, metal working, printing, auto mechanics, electricity or mechanical drawing, — if presented as industrial arts courses, they add to the general knowledge of the individual. Any person interested in the realities of the industrial world may take these courses with profit. As an industrial arts course, woodworking is not taught primarily for boys who later in life expect to be carpenters, pattern makers, cabinet makers, mill rights or any other occupation allied with the handling of wood and woodworking machinery. The prospective physician, lawyer, minister, jeweler, farmer or common laborer may engage in this course with profit. The subject matter is designed to contribute skills, experiences, appreciation, and informations that may be used in any line of occupational endeavor. It is general, not specific. It is a part of general education, not vocational education.

The explanation of the industrial arts aims of a woodworking course may be identically applied to metal working, printing, auto mechanics, electricity and mechanical drawing when these subjects are taught under the heading of industrial arts. Each of these courses may be elected by any pupil interested in the body of general information centered around the respective title. These courses are not vocational. They belong to the group of courses that are included in the curriculum because of their general educative value. Larger schools, especially those located in industrial communities usually provide this variety of subjects from which pupils may choose the types of shop work in which they are vitally interested. The smaller schools offer a more restricted number of subjects in the industrial arts group. In the smaller schools, the most recent development in the industrial-arts field has been the widespread adoption of the general shop. This one shop offers a variety of experiences in several divisions of industrial activity. When properly organized and taught, the general shop becomes an excellent means of imparting industrial information.

It should be borne clearly in mind that the pupils who take industrial-arts courses are not receiving vocational training. Of course, the shop equipment may be adequate for the

teaching of specific skills and processes. Vocational classes may be handled with the same equipment. But the aims, methods, organization and content of the courses change when the title of industrial arts is removed and they are taught as vocational classes. The change is from general industrial to specific industrial, from general education to specific education, from a broad training to a narrow training.

The prevalence of industrial growth and expansion has been one of the most astounding realities of the present century. The advancements in the mechanical world have surpassed man's wildest dreams. The applications of science and invention have given to the world the most tremendous mechanical age in all history. And although present indications point to maladjustments in the manipulation of industrial enterprise, there is no reason to believe that shops, factories, machines, procedures, and the like will be discarded. Science and invention will not cease. Regardless of present conditions, there is every reason to believe that industrial life will continue to become more complicated and more perplexing as the years go on. If this assumption is true, the average citizen will be called upon to know more and more about industrial life in order to understand intelligently its everyday significance and in order to make the necessary adjustments in his everyday living. The facts surrounding these matters should be included in his general education. They are factors which must be considered as parts of his training for citizenship.

Modern man no longer can escape the almost incessant contacts with industry and its products. His senses constantly are being challenged by impressions that are the direct results of industrial activity. Nearly every thought and act of his conscious existence is in some way dependent upon industrial life for its fullest expression. To understand and appreciate his surroundings adequately be he "butcher, baker or candle-stick maker," he must know something about industry and its working. To possess a satisfactory fund of general education in this century, the "doctor, lawyer, merchant, chief" must give considerable attention to machine activity. It is clearly evident that man has become an everyday actor on the industrial stage and that regardless of his individual desires, aptitudes, interests or wishes, he is compelled to grapple with the realities of a machine age. It may not be far from correct to assert that the predominating theme of his general education is an absolute need for the appreciation of twentieth century industrial activity. Whether he obtains this knowledge in or out of the school, it is a most important part of his education.

The public school must be a part of the life and time that it represents. It is obligated to provide training that will help the young citizen solve the problems of today. The need is immediate. Education should function now. Instead of focusing so much attention upon preparation for future living, the school should teach the way of making adjustments to present-day life. With the present properly interpreted and understood, the future will not be difficult to handle. Realizing the influences of industrial activity in all phases of current liv-

ing, the school must assume its place as an agency for providing intelligent interpretations of society. To present an adequate story of industry in modern life is a colossal undertaking.

Many teachers outside the field of industrial arts realize the pressing demands from pupils for industrial information. They do their best to meet these demands by including selected material in their courses. English and mathematics have been modified by the inclusion of exercises, readings, examples and problems to illustrate facts from industrial practice. History and science have been revising parts of their teaching material along similar lines. Other school subjects have tried to introduce explanations of industry into their outlines. All these attempts have been of material assistance but they have not succeeded in solving the problem of interpreting industry to the young citizen. In these and other courses, the introduction of industrial information is supplementary to the abstract material considered as of first importance in the respective course. Also, the average teacher of the traditional subjects is not properly prepared to present industrial information. At best the results are of secondary importance. It has been necessary for the school to provide a more satisfactory means of giving to the youth of today an intelligent and direct explanation of modern industrial life.

The industrial-arts courses have been introduced into the school curriculum in response to a demand for general information about industry. As a part of the general education program, they supply a definite need. With modern industry and all its relationships removed from everyday living, the industrial-arts courses would become obsolete. But with the very existence of man dependent upon industrial practice, who can refute the absolute importance of the industrial arts in any program of general education? The school has recognized the need. It could not meet the need through the traditional subjects. The industrial-arts courses have been adopted by the schools as the most satisfactory means of imparting industrial information to the young citizen.

By the introduction of industrial-arts work into the schools, the real values of general education have increased. American education was highly restricted until comparatively recent times. The previous plan gave training that led to the understanding of a certain few occupations. The professional and managerial types of occupations commanded the center of attention. For some mysterious reason, they were looked upon as possessing an ethical superiority to the commercial, agricultural, household and industrial lines of human interest. All children were forced to pursue pre-professional training or sever their contacts with the educational system. Administrators and teachers were honest and well-intentioned in their efforts to provide pupils with education of the "highest" type. They even refrained from teaching anything that might inform the young people about the so-called "lower" occupations. They argued that their pupils were entitled to the best that could be given. Schools provided a general education that was restricted to information and practice closely re-

lated to the leading vocations of the day.

The wholesale withdrawal of pupils from school during their adolescent years prompted a serious study of the educational program. The result has been a modification of school curricula. The previous plan was shown to be incredibly shortsighted. Every youth in the land is not exclusively interested in the professions. By far the largest numbers are vitally concerned about information pertaining to other activities. Industrial expansion and specialization occupies a most important place in everyday life. An understanding of the industrial world has become an essential factor in each citizen's general education. To meet this problem, the industrial arts have been introduced into the school curriculum.

The field of industrial arts covers a wide range of experiences that contribute directly to the aims of general education. Tools and machinery introduce an entirely new group of experiences in the school program. Materials and various media used in the shops provide a fund of practical knowledge that is available only in shop courses. Habits of orderly procedure and systematic work in the doing of specific jobs are fundamental parts of the industrial-arts program. Information about factory organization and procedure is given as an important part of the shop work. An individual appreciation of good workmanship and of industrial products is an aim toward which industrial-arts courses strive. In general, the emphasis is placed upon things to be taught rather than upon things to be made. The shop project serves as the motivating factor. The program in its actual interpretation is expressed in terms of information, attitudes, interests, elementary skills, good habits of work, and appreciations. These factors are important parts of general education and are necessary in the lives of all boys and men, regardless of their vocations.

The public schools exist for the purpose of developing the individual into a useful citizen. The program must provide information and training in the activities that the individual meets in his everyday life as a citizen. The various school subjects have been designed to fulfill these needs. Twentieth century industrial activity has made it imperative that every citizen understand the fundamental principles of the machine age. The industrial arts have been introduced into the curriculum as the most satisfactory means of presenting a direct and an intelligent account of our industrial society. Regardless of one's occupational interest, the industrial arts provide a fund of general education that is absolutely necessary at the present time. These subjects are making a most important contribution to general education.

ERRONEOUS IDEAS ABOUT INDUSTRIAL ARTS

THOMAS DIAMOND
ASSOCIATE PROFESSOR OF VOCATIONAL EDUCATION
UNIVERSITY OF MICHIGAN

This is a very frank and vigorous discussion of some very important and difficult problems confronting all teachers in the public schools. Those who desire specially trenchant discussions of their problems will enjoy this.

THERE has been considerable discussion of the relationship which should exist between Industrial Arts and Industrial Education. Undoubtedly this discussion has led to a better mutual understanding on the part of many of the teachers employed in both fields. However, since there are still many who do not fully realize what the objectives of the other side are, it is hoped that the present article will be accepted merely as another effort to stimulate thought on the whole question of our objectives.

In order that the reader may more readily understand the point of view expressed, it should be stated that what is said here is based upon the assumption that there is a distinct difference between Industrial Arts and Industrial Education. This difference does not lie in the materials used; it is not in the pupils who enter the courses; nor is it in the equipment used. The fundamental difference lies in the purpose for which the work is given. In the field of Industrial Education the motivating purpose is the preparation of a person to follow more effectively some pursuit. In the field of Industrial Arts, the arts of printing, woodworking, metal work, etc., are used as media through which a contribution may be made to the general education of the pupil.

It is unfortunate that the general public does not recognize the distinction between the two fields. It is more unfortunate that people in education also fail to appreciate the difference in objectives. But perhaps both of these groups can be excused when we realize that the person in immediate charge of the Industrial Arts work frequently shows an inclination to confuse his objectives. Industrial Education, as a part of the public school program, is relatively new when compared with Industrial Arts. Moreover, in some cases, the newer type of work is subsidized by the Federal Government. These facts have caused many teachers of Industrial Arts to forsake their legitimate field in the belief that, in order to save their souls, they must clamber aboard the industrial education bandwagon.

In many cases this desire for change is the result of a lack of an adequate industrial background. The teachers who have been trained in our normal colleges may have had contact with certain trades during their normal-school experience, but rarely is this sufficiently broad to develop an appreciation of real trade training. These experiences may be very much worth while, but even the most enthusiastic normal teacher would hesitate to say that his students acquire the necessary skill and knowledge to en-

able them to train tradesmen. In spite of this we find that, in many cases, no definite effort is made to impress upon the beginning teacher that, unless he has had wide experience in a trade outside his college work, he is not likely to fit into a situation where a trade training is the main objective. Furthermore it is believed that a much greater effort should be made to impress upon those young teachers the tremendous potential value of industrial arts as an agency in education. It would be helpful also in establishing industrial arts in its rightful place in education if we could develop within those young teachers a professional spirit which would enable them to appreciate the scope of the field which they have chosen, and which would bring them to the realization that, in most cases, training for specific occupations is not their function.

A belief, which is just as common as the first, but which is vastly more disturbing, is to the effect that, somehow or other, industrial-arts teachers are made of baser metal than their more fortunate brethren in Latin and English. This belief is much more common than some people suppose and, unfortunately, some of our industrial-arts teachers seem to have a suspicion that perhaps it is well founded.

In those cases where this suspicion exists it is probable that, while the attitude of his fellow teachers has always been kindly, the shop teacher has had a feeling that they looked upon him more as the school handyman than as an associate of equal rank. In many cases this feeling has caused him to sieze the vocational objective as a means of justifying his existence. After he has adopted this trade preparatory motive he has the responsibility of justifying it, and he finds his task more difficult than before.

This feeling of inferiority, which seems to be felt by some, may have been created as a result of the practice followed in some schools of calling upon the individual in charge of industrial arts to do such odd jobs as have to be done around the school building. Perhaps scenery is needed for the school play; equipment may be needed for the athletic department; some tables may have to be made; tickets or programs may have to be printed, or the board of education may have some forms they wish to have prepared. Whatever the job is, the universal demand for economy seems to justify having it done in the industrial-arts shop. When the problem is presented to the teacher he must cooperate with the administration or he must educate those responsible for issuing orders to the point where they can appreciate the real function of an industrial-arts department. One cannot blame him too much if, in many cases, his action in the situation is influenced by the fact that he has a natural desire to stay on the payroll. Greater criticism might be directed toward the principals, teachers, and others who are demanding this outside work if it were not for the fact that frequently they fail to appreciate that they may be minimizing the value of one of the agencies which they have set up for the purpose of providing young people with a comprehensive general education.

It is not suggested here that these jobs should not be done in the school shop. It is believed that many of

them ought to provide excellent educational material but the determination of which should be done in school should rest upon some individual who is thoroughly familiar with the industrial-arts program. If, in his judgment, the work to be done aids in the carrying out of the departmental program he may decide that it should be done. On the other hand, if he believes that the only end to be gained by doing the work is the saving of some money for the Board of Education he may suggest that it be done by a commercial firm.

In other words, if the industrial arts are to attain the position in the school system to which they are entitled, and if, as a result of this, the teacher in this field is to be received on the same professional footing as teachers of the more formal subjects those concerned with types of education must assure themselves that, whatever is done in their shops must make some contribution to the education of the children.

There are those in the field of education who believe that the subject matter included under the term, "industrial arts," is not really expected to make any contribution to the cultural training of the children. Coupled with this is the idea that the industrial-arts shop is a place where boys are given an opportunity to make things. If these notions were found only among teachers of academic work the situation would be bad enough, but the distressing thing about it is that many of the teachers in our own field appear to have the same attitude toward their work. In many cases courses of study in industrial arts are prepared in terms of projects; if one should ask the teacher what is done in his classes he is likely to discuss the projects being made; and the attention of the casual visitor to a class is usually directed toward the jobs being done. It is believed that great credit is due to those teachers who show initiative in selecting and planning the work to be done in the school shop, but it is disappointing to find some who are unable to discuss the specific purpose they had in mind when they selected a piece of work for a pupil.

Much criticism has come to us because we have not been quite sure of our ground. We have had a hazy notion that our work ought to be educational in character, but we did not know exactly wherein the education lay. Frequently we have secured for ourselves excellent courses of study from teachers colleges and we have felt that, because of their source, they ought to be good. It is probable that, as illustrations of what a course of study might be, they were good. Unfortunately we have not always realized that the purpose of those courses and the purpose of the one we might have developed for ourselves may have been entirely different. Because of this some have found themselves in a position where they were supposed to be contributing to the educational plan of a school and where their convictions were not sufficiently strong to enable them to convince their fellow teachers that they were indeed contributing their share.

Another condition which tends to bring discredit on the teacher of industrial arts is the result of too much individualization in the selection of what should be taught in any subject or grade. It is not suggested that every teacher should teach the same

thing in the same grade in the same way, but it is believed that some standardization might be brought about which would make for greater efficiency and would remove much of the criticism directed toward our work. As an illustration of this the writer is familiar with one city where there are a number of schools in which each teacher is a law unto himself in regard to what he teaches and where he teaches it. Obviously there is much duplication of subject matter and little understanding on the part of each teacher of what his specific contribution should be to a general program. This situation is quite out of harmony with customary procedure in education where Mathematics I or English II in any given city mean the same thing to all teachers in the system who teach those subjects. In other words the teachers of these subjects have come to an agreement on what should be taught in Mathematics or English. They have agreed further that all teachers of Mathematics I shall be responsible for a certain section of their subject and that no teacher of this class need concern himself with the task of teaching what has been reserved for Mathematics II.

In the first case considered we have a group of teachers who are privileged to teach whatsoever they please within their field. In the other case the teachers are merely cooperating units in a general plan. Since this situation exists in some communities it is not surprising to find that we have academic teachers who lack appreciation of the function of the shop teacher.

It is not suggested here that the industrial teachers are wrong in their policy of avoiding specific divisions of subject matter but we must recognize that the practice is general in school work. In view of this it is desirable that they conform to this practice if they hope to have their subject recognized as a necessary part of the public school program.

That the teachers in the field of industrial arts are conscious of this weakness is evidenced by the fact that a national committee, under the direction of Professor Selvidge of the University of Missouri, has been at work on the problem of determining specifically what a pupil should know and be able to do after he has completed the work offered in the various industrial-arts courses. This committee has very wisely refrained from suggesting how this material should be divided according to grade. However, if the teachers in each community will make use of the material collected by this committee and will come to a common understanding of which specific parts can be taught in each class, having in mind the prevailing conditions and the available time in their community, they will have done much to secure the respect of their associates in the more formal fields.

Then there are those among us who believe that their success or failure as teachers of Industrial Arts depends upon the amount and grade of the equipment they have. If they happen to be in a school where the equipment is meagre, or if the most recent refinements are lacking, they act as though the world was against them. This feeling is reflected in the character of the work done in their departments, and not only this, but invariably visitors are made aware of the fact that, if the administration would

only replace the antiquated equipment with a more modern type, wonderful things might be accomplished. In other words, the teachers endeavor to cover their indolence or inefficiency by complaining about the attitude of their superiors toward the equipment they have inherited.

Undoubtedly a department which has an ideal location and equipment will serve as a tremendous stimulus to both teacher and pupil, and all teachers who are ambitious have a natural craving to be placed in such a situation. However, it is true, also, that good teaching may be done with meagre equipment and a resourceful teacher who lacks the advantage of excellent facilities can do much with whatever is available.

The teachers in the field of industrial arts are not the only ones whose thinking seems to be astray. There are others in the public schools who believe that the main function of the school shops is to accommodate those students who, for any reason, are out of step with the faculty or curriculum in other parts of the building. Ordinarily this situation should be most gratifying from the standpoint of the industrial arts teacher because the inference is that he is qualified to handle those problem cases which have proved too difficult for other members of the staff. However, while we are willing to accept the compliment and while we are glad of the opportunity to contribute our share to the solution of the problems arising in any school, we ought to have the right to resent the feeling expressed by some that the industrial-arts shop is intended exclusively for pupils with a low I.Q. The next question likely to arise is "Have we this right?"

The Industrial-Arts Shop has unlimited possibilities as a school laboratory. The opportunities for experimentation and research on a high school level cannot be surpassed in any other field of high school work, and the material available for the motivation of study is unlimited. Since we believe these statements to be true the validity of any objections we might raise to our classes being classified in the subnormal group will depend entirely on the extent to which we use the excellent facilities with which we have been endowed. If we continue to use our equipment merely for recreation or amusement we shall continue in the capacity of caretakers for the mentally unfortunate. On the other hand, if we wish to attain the respect of our fellows we must demonstrate that shops are laboratories in which opportunities are provided for the students to apply the principles of science and art which they learn in their more formal courses.

It has been pointed out that teachers in the field of industrial arts have strange notions about their job. It is believed that the teachers in this field are not materially different from others in this respect. We have suggested that the field of industrial arts is broad enough and sufficiently important in the field of education to be worthy of a teacher's whole effort. Moreover, it has been pointed that, while a teacher in this field may have all the qualifications needed for teaching a trade it does not follow necessarily that he must have them.

The industrial-arts teacher must appreciate the fact that, in most cases, he is not expected to train tradesmen for specific jobs. He must be con-

scious of the fact that, in many cases at least, he is entirely unqualified to teach a trade, and that, generally speaking, no one who understands his functions ever expects him to do so.

On the other hand it is imperative that each teacher realize that he is responsible for a phase of education which is very much worth while; that he must examine his contribution to that field critically in order that he may assure himself of what his specific contribution is; that he use every means in his power to familiarize the school administration and his fellow teachers with what it is; and that he be thoroughly convinced that he has a task to perform which is sufficiently important and sufficiently broad to warrant his spending his full-time on it. Only when these conditions prevail can we hope to secure for the industrial-arts teacher the professional standing to which he is entitled.

A PLAN OF SUPERVISED STUDENT-TEACHING IN INDUSTRIAL ARTS

RUSSELL T. GREGG
UNIVERSITY OF ILLINOIS

This is an account of an unusually successful method of dealing with a most difficult phase of teacher-training.

SUPERVISED student-teaching has many critics as well as many supporters. It is true that there has been little objective evidence produced relative to the value of student-teaching; the problem has so many inherent difficulties that such evidence must necessarily come slowly. Most persons, however, with a sincere interest in the promotion of the art of teaching will readily agree that the objectives[1] toward which the supervisors of student-teaching are striving are legitimate ones in a well-rounded program of teacher training. Supervisors of teacher training who have the opportunity to see the gradual development of professional attitude, command of materials and techniques of instruction, and skill in the handling of these on the part of the student-teachers are for the most part convinced of the importance of student-teaching in a teacher-training program.

The writer can readily conceive, however, of so-called student-teaching which might be characterized by its ineffectiveness rather than its efficacy. To obtain desired results student-teaching must be just as carefully planned and executed as any other professional activity. The supervisor must be alert to see the problems of the student-teachers, and must direct them into activities which will enable them to come to a solution of their problems. It is the purpose of this paper to describe rather briefly a plan of student-teaching in industrial arts at the University of Illinois which both the supervisors and student-

1 For some statements of these see: Breslich, Ernest R., Gray, William S., Pieper, Charles J., and Reavis, William C. "The Supervision and Administration of Pactice Teaching." Educational Administration and Supervision, 11: 1-12, January, 1925.
Mead, Arthur Raymond. Supervised Student-Teaching. Richmond: The Johnson Publishing Company, 1930. Chapter II.

teachers believe to be unusually successful.

The principle that the individual must be given careful consideration in any plan of instruction is especially significant in student-teaching. Each individual has his own strong points which must be capitalized as well as certain weak points which must be overcome, or at least minimized as much as possible. In the student-teaching work, therefore, an attempt is made to place not more than two student-teachers in any one class, so that the staff teachers and supervisor may have ample opportunity to see each student-teacher at work and may have sufficient time to have the needed individual conferences.

Student-teaching activities are carried on in the University High School and in one of the public high schools of Champaign-Urbana. Opportunity is given for registration in woodshop, mechanical drawing, printing and automobile mechanics. The finest spirit of cooperation exists between the staff teachers of these high schools under whom student-teachers of industrial-arts work, and the industrial-arts department at the University. Although the staff teachers enjoy much freedom with respect to directing the activities of the student-teachers, all activities are always under the direct supervision of a member of the University faculty. Teachers in the public high school who have student-teachers working under them are granted the privilege of registering for work at the University without tuition.

Only seniors are admitted to the student-teaching course. This requirement naturally safeguards the matter of preparation in the field of specialization as the students usually have completed their major subject requirements by that time. Most of them will have completed two or three general courses in education by the time they present themselves for student-teaching and either will have had a course in special methods, or will be registered in it. From experience it has been found that there are advantages in either case in regard to the special methods course.

The student-teacher enters the high school class as a student. First he must demonstrate to the pupils in the class, as well as to the staff teacher and supervisor, that he is capable of shouldering the responsibilities which are to be assigned to him. For example, the student-teacher in the drawing class must first make some drawing plates which have been so chosen as to test his knowledge and technique of the different units of the course, and at the same time acquaint him with the special rules or requirements which are being exacted by the staff teacher. In the woodshop the student-teacher may be asked to make a small project, or he may be asked to analyze the different projects which the pupils are making, into operations to be performed by the pupils, and then make certain that he is familiar with an approved method of performing these operations. Usually in two or three weeks the student-teachers have reviewed their subject matter and demonstrated their ability sufficiently to be made responsible for some definite tasks in the classroom or shop.

At first the tasks assigned to the student-teachers are relatively simple and not of too long duration, e. g., assignment for the succeeding day,

helping the pupils check out lumber, giving aid to a certain individual who is retarded in his work, teaching pupils how to tie up type, etc. As soon as a student-teacher has shown that he can do well the task assigned, he is immediately assigned a more difficult one, the theory being that the student-teacher should be allowed to assume as many and as important responsibilities as he indicates he is capable of bearing successfully. According to this theory it is possible that one of the two student-teachers in a class may so demonstrate his ability that he will win the privilege of taking full charge of the class for a period of two weeks or more; the other may not arrive at that point of efficiency necessary for the granting of this privilege. The decision is left to the student-teachers as to how much responsibility they shall assume, and since they realize early in the course that the quality of the work done will influence quite substantially the kind of recommendation given them by the Appointments Committee, they are anxious to do the best grade of teaching they can.

When the student-teacher has shown that he has been successful in instructing one or two of the slower pupils he is assigned to work with a group of pupils. Often the pupils are divided between the two student-teachers, each one being charged with some of the slower pupils as well as some of the more capable ones. In this manner they soon find themselves in competition with one another, each trying to keep his group ahead of the other. It has been found that this practice tends to lead the student-teachers to an understanding of the great importance of individual instruction. If it so happens that the class is divided into groups of pupils, and that each member of any one is making the same kind of project, it is well to let the student-teacher work with one of these groups; later on he may include other groups and finally work with the whole class.

Shortly after the middle of the semester it is likely that one or more of the student-teachers is ready to take full charge of the class. At first these occasions are of short duration — probably fifteen minutes — during which time the student-teacher may give a demonstration, talk on some informational topic related to the work in progress, or lead a discussion concerning some problem at hand; later in the semester these periods will be extended to include the whole class hour, and probably for a week or two at a time. All these occasions are very carefully planned by the student-teacher. He is asked to prepare a plan in advance in which he states his aim and the materials and techniques to be used in the accomplishment of this aim. The plan is then submitted to the staff teacher or supervisor for criticism and suggestions. Usually the staff teacher or supervisor has a short individual conference with the student-teacher who carries out a lesson plan following the class period and later the significant points are discussed in group conference.

Each week there is a group conference of the student-teachers and staff teachers under the direction of the supervisor. Each of the student-teachers submits on the day preceding this conference a written report upon a topic assigned the week before. These topics are directly related to the subject and classroom in which

they are working and may be illustrated somewhat by the following suggestive list: (1) Observation of the physical factors of the shop or classroom, (2) Shop and classroom organization and management, (3) Analysis of the industrial-arts teacher's job, (4) How to prepare a course of study for industrial arts, (5) Planning for the first day of school, (6) Objectives of industrial-arts courses, (7) Lesson plans: their preparation and use, (8) Characterization of individual pupils, (9) Examinations: kinds and their uses in industrial-arts classes, (10) Individual vs. group instruction, etc., etc. As the supervisor reads these reports he makes notes and these notes are used as a basis of discussion at the conference. Any staff teacher or student-teacher is also free to raise points for discussion. As a general thing the writer has found this group conference to be enthusiastically entered into by the student-teachers, and many vital questions arising out of actual classroom situations are discussed.

Although the University examinations usually begin before the high school examinations the student-teachers are asked to help finish up the semester's work in the classes in which they have been cadets. They make out examination questions, help conduct the examinations, aid in scoring the papers and making out the final grades. Their work is not complete until the semester grades of the pupils are ready to go to the principal's office. The student-teachers are not asked to take a semester examination but in lieu thereof they are asked to write a final report along the line of a critical summary of the course, together with suggestions for improving it.

One of the objectives most striven after in student-teaching is that intangible one of increased professional attitude. It has already been stated that the student-teachers are informed at the beginning of the course that the recommendation for a teaching position, which they will probably ask for after graduation, will be largely influenced by the quality of work done while student-teaching. Professional attitude is emphasized throughout the course. Every effort is made to create a desire to excel and advance in the teaching profession; to develop a feeling of responsibility for the progress of the pupils; and to show the importance of the cooperative spirit.

Each semester the student-teachers work as a group upon some problem or project. One semester they wrote and later revised over sixty operation sheets to be used for purposes of instruction in the shop; another semester a number of information sheets were prepared. At the present time they are preparing charts which show the relationship of the various industrial-arts subjects to the different occupational pursuits of life. The results of their efforts on these group problems are blueprinted and made available to each student-teacher so that he may use them in his own classes later. To be sure these results are not definitive in any way but they open up to the student-teachers the possibilities of continuous professional development. If one can only lead the student-teacher to a realization of the importance of continued study while in service, that outcome alone would be ample evidence of the value of student-teaching.

INDUSTRIAL ARTS EDUCATION IN LARGE CITY HIGH SCHOOLS

Boys Who Want to Learn the How and Why of Doing Mechanical Work are Given a Chance

Albert G. Bauersfeld

DIRECTOR OF TECHNICAL WORK IN THE CHICAGO HIGH SCHOOLS

This is an unusually practical discussion of the subject. It comes out of many years of first-hand contact with the instructional and administrative problems of industrial education in Chicago.

A tremendous change has taken place in the public high schools of our large cities during the past thirty years. A generation ago high schools were attended by the select few who were trained almost exclusively through book knowledge. Nowadays high schools are filled and overflowing with eager boys and girls who want to learn how to do some of the practical things which are going on in the business world about them.

At the age of six most boys want to be (when they grow up) either a policeman, a fireman or a motorcar man. At the age of fourteen these boys leave the grammar schools and decide to become architects, electrical engineers, doctors, captains of industry, skilled tradesmen, etc. At the beginning of each school semester the grammar school graduates come to the high schools for the purpose of enrolling in courses which will fit them for some kind of productive activity. It is true most of these neophytes have very vague notions as to what is required in study and training before the goal is finally reached. Here is where the experience and kindly advice of the principal and teacher come into service.

To the boy who wants to become an electrical engineer in quick dispatch, the advisor explains that a four-year technical course is an excellent foundation for him to build on. In this course he will receive three or four years of shop work (including electrical laboratory and construction work) three and one-half years of mechanical drawing, three years of mathematics, science and English, one year of history and civics, two years of foreign language, one-half year of freehand sketching, and four years of physical or military training. This boy is then further informed that graduation from this four-year technical course will admit him to an engineering college which specializes in an adequate preparation for an electrical engineer. The boy then enrolls in such a course with a definite objective ahead of him. However, during the next four years the boy may change his mind several times as to his life's work, — as most boys do. That is why the four-year technical course was made broad enough to give basic training for many occupations.

This boy's technical course aims to offer a sequence of shop work which parallels the production departments of industrial manufacturing plants. In the first year woodwork and pattern work are given; in the second year, foundry and forging; in the

third year, machine shop or auto mechanics, and in the fourth year electrical construction or printing. One and one-half hours each day of this course is given for the shop work and three-fourths of an hour for mechanical drawing. During the first two years of the mechanical drawing course a boy will be trained in the principles and practices of working drawings, and then in the next two years he is permitted to elect intensive work in either machine design or architectural drawing.

Chicago has three technical high schools for boys: The Lane, located on the North side, the Crane on the West side, and the Tilden on the South side. In these schools the courses of study are built around the shop work and mechanical drawing. A four-year technical course is also given in eight of the co-educational high schools.

One-half of the 40,000 boys enrolled in our high schools are taking courses in the Industrial Arts. This means that the boy who has a natural desire to build and create things with his hands is given an equal chance for scientific training with the boy who enjoys book knowledge.

Most of the so-called "poor boys" who leave school at fourteen and go out into the world and become eminently wealthy in short order, — according to story books of three decades ago — are now in the high schools, taking two-year vocational courses or the standard four-year technical course. There are five two-year vocational courses offered for the boys who enter high schools and do not expect to graduate. These are courses in:

Machine Shop
Mechanical Drafting
Printing
Electrical Construction
Automotive Work.

One of the purposes of offering these courses is to hold the boy between fourteen and seventeen years of age in school for at least two years longer, and to give him a chance to try himself out in one chosen branch of trade work for a period of two years. The courses are so planned that by means of electing in the third and fourth years, the required academic subjects of the first and second years, which he omitted, he will then be able to graduate should he decide to complete the regular four-year technical course.

The purpose of the Industrial Arts course in the high schools is not to turn out skilled tradesmen, but the aim is to give a boy training in the various shop processes and to permit him to gain first-hand knowledge of the industrial significance of each shop in the manufacturing world. In order to manufacture a lawn mower, or an electric washing machine one must know exactly what to require of the drafting room, the pattern, foundry, forge, machine and electrical shops. The ability to make these different shops coordinate properly is best obtained through actual experience in them. This kind of technical knowledge and experience is valuable training of the highest kind no matter what occupation the boy will take up as his life's work.

The question repeatedly asked by a parent when his boy begins a four-year technical course is: "What kind of a job will my boy be able to master when he finishes this course? Will he become a carpenter, a machinist, a draftsman, a mechanical engineer or something else when he is through?"

The answer that the advisor usually gives to such a question is that the boy is too young to specialize on one particular job. The old adage, "You cannot put an old head on young shoulders" applies with great force in such a case. The thing the schools are trying to do is to give basic training in a number of industrial lines, in order that the boy may make an intelligent choice with a broad foundation to build on when he takes up his life's work.

"By their work you shall know them," is the far-reaching judgment that applies to all men and organizations. The public schools make surveys and inventories from time to time to find out what they are accomplishing in the way of training intelligent, broad-minded and capable citizens.

A study is just now being completed in one of the Chicago high technical schools for the purpose of finding out just what becomes of the graduates of a four-year technical course. What kind of work are they doing after a period of five, ten or fifteen years? Did the course they had in high school directly or indirectly help them in training for their present position? How many jobs have they had since they left high school? What is their present yearly salary or income? What studies helped them most and why? What helpful criticism have they to offer to improve the existing technical courses?

A questionnaire consisting of fourteen questions was recently sent out to 1500 technical high school graduates, and the returns were classified and tabulated. From this study we learn that in Group No. 1, 38% of the graduates may be classified as building and industrial mechanics, contractors, and managers of manufacturing plants.

Group No. 2 which is listed as the Commercial Group has 31.3% of the graduates who are salesmen of technical goods, advertising, real estate, machinery, automobiles, etc. A number of the older graduates report that they have become executives, directors or owners of merchandising establishments.

Group No. 3 represents the Professional workers where 30.7% of the graduates were listed as doctors, surgeons, dentists, lawyers, artists, and engineers, such as civil, mechanical, electrical and chemical.

Shop work is reported by the majority of these graduates as being the most helpful high school subject for use in their present occupation. The earning power of these men show a range of from $16.00 per week for beginners to incomes in three and four figures according to relative responsible position and length of service. These reports clearly show that a four-year high school course pays big dividends as an investment for the future productive period of a worker.

Aside from the dollars and cents point of view, an education about technical things combined with courses of study in the science, mathematics, English and cultural subjects is good preparation for all avenues of life. In one of these reports from a graduate who later became a minister, we found that this minister felt that he was able to preach better sermons because he understood some of the different kinds of work demanded in the manufacture of useful products, and how the employee and the employer must cooperate intelligently to carry on the work of the world.

PROGRESS AND ACCOMPLISHMENT IN MANUAL ARTS TEACHING*

W. E. Roberts

SUPERVISOR, MANUAL ARTS, CLEVELAND CITY SCHOOLS
CLEVELAND, OHIO

This comprehensive survey of industrial arts at the junior-high school level will be particularly interesting to those who know of the extraordinarily successful work of the author through many years as supervisor in the Cleveland schools.

IN no field of educational work and endeavor has there been more significant change and development in the past thirty years than in the field of industrial arts. The history of this development is an exceedingly interesting story, and in its telling, if such were the purpose of this writing, it might easily be shown that industrial work has had a profound and lasting influence upon the thinking, terminology and methods of general education.

Since its beginnings in this country in 1876, manual arts in some form has been increasingly associated with public education. First introduced into private and public secondary schools, it has reached, and affected in principle, every department of school life. It has been subjected to all the criticisms attendant upon any departure from the traditional tenets of subject matter and method in education, but is now generally accepted without serious question as an essential element in public school work and organization.

Different conceptions of the functions of the manual arts have been emphasized at different periods of its development. At first the practical aspects of the work were stressed. Later its intellectual and cultural values were urged as more important. Still later purely vocational outcomes of occupational work were emphasized almost to the exclusion of other values.

Today the educational values of manual arts are accepted as paramount, and their best expression is found in the intermediate or junior high school grades. It is here that the work makes its strongest and most universal appeal, to parents and children and to those responsible for school administration, and it is upon the work of these grades that the best thought of those interested in its development has been centered, and the most important advances made.

Among the fundamental educational claims of the junior high school are recognition of the physical and mental changes taking place in the child at the various stages of school life and experiences, recognition of individual differences, meeting demands for educational and socializing opportunities, and providing opportunities for exploration essential to guidance. Response to all of these claims finds ready expression through manual arts activi-

*The term manual arts is used in this writing to designate shopwork for boys as distinguished from other work in the larger field of industrial arts.

ties, and the purpose of the work is to contribute to their realization.

Three functions of the manual arts contribute definitely to the work of the junior high school. First, as providing a means of general development and education; second, a means of educational guidance and third, opportunity for acquisition of knowledge of constructive principles and the development of constructive skills which will be valuable in later professional, industrial and social life, or as avocational interests. It is upon these three fundamental functions that the present conception of the objectives, subject matter and methods of the manual arts are based.

Manual Arts Objectives

Among the very evident shortcomings of early manual arts work was the absence of definite statements of what the teacher was trying to accomplish, either as to ideals or specific knowledge and skills. If statements of objectives were given they were usually in lofty terms unrelated to subject matter and methods. As typical of more thoughtful consideration today, the major objectives of manual arts may be broadly stated as general education, educational guidance, and specific knowledge and skills.

The first of these is common to all manual arts subjects as well as to all school subjects. It has to do with general culture, the development of elements of character and social relationships. These are in a sense ideals. Their attainment is primarily the result of how we teach and only incidentally a result of what we teach — of methods rather than subject matter. They are the most important of the teacher's objectives.

Educational guidance includes such objectives as discovery of individual interests, abilities and needs; guidance in the selection of school subjects adapted to probable future needs; industrial relations and their association with tentative life career motives and incentives.

The third major objective may be designated as concerned with specific accomplishments in knowledge and skills, dealing with concrete things to be known and done — the things the pupils ought to know and be able to do as results of their efforts. These are tangible, capable of concrete expression, and may be definitely measured and evaluated. They include knowledge of tools and appliances and the mastery of principles of construction.

A careful analysis and statement of objectives is essential and of value when consciously related to subject matter and methods.

Subject Matter

One of the most remarkable developments in the manual arts, if we look back over its history, is the evolution of its subject matter. Curiously enough the first contributions were foreign. From Russia came to us a barren and meaningless series of exercises presenting principles of mechanical construction, largely in woodwork, without application and unrelated to practical experiences; and these, for a time, constituted the sole material and incentive to aims and effort. Then from Sweden came the Sloyd, a fixed set of "models" of so-called useful objects, of supposed interest to the pupils. They involved the exercises or principles of the Russian work with an added element of

interest, but the objective was the same — a skilfully executed product. The product itself in its relation to the life and interests of the pupil was a secondary consideration. From these contending foreign influences there gradually emerged a type of work adapted to the needs of American schools.

The early work below the high school was confined almost wholly to the use of wood. This was largely a matter of tradition. Wood was an inherited and accepted medium and the limited time given to the work in the schools required substitution rather than addition. With the coming of the vocational education movement in 1906 there arose a demand for a wider range of activities and materials, but without significant response until the advent of the junior high school with its more intensive and elastic program and more liberal time allotment. Workers in the field of manual arts were hardly prepared for readjustment, and for a time confusion prevailed. Almost every conceivable type of work was advocated with very little logic or reason, aside from the interest of the advocate.

From this confused and rather chaotic situation order has gradually developed. Assuming as the major objectives of the work, general education and educational and vocational guidance rather than vocational preparation, we have a broader and more reasonable basis for selection of subject matter. The usual procedure had been that of selecting industrial units at random, or, because of supposed local demand, analyzing these into fundamental processes, and devising methods of presenting them to classes.

The broader conception of manual arts work as realized in the junior high school is shown in what might be termed the grouping of related activities within certain of the larger units of industry. A study of industrial occupations has revealed the fact that a very large number of these are included in or closely related to activities that have to do in some form with wood, metal and the materials of the typographic arts. It seems logical, therefore, that activities adapted to manual arts, with a major objective of general education, should find their best expression through related work in the three fundamental occupational fields of woodworking, metal working, and printing. These subjects may be broadened to include the general fields suggested by their titles, as well as related work which local conditions may demand. For example, woodwork may touch upon many of the phases of handwork included in that field. Printing may deal with a variety of related trades, and metal work may include elements of sheet metal work, art metal, bench metal, machine work, forging, and foundry work. Simple electricity may be related to either woodwork or metal work. Within these fields, including drawing, there is latitude for the broadest possible interpretation or expression of the manual arts. This basis of organization is further justified on grounds of economy of equipment, space, and size of classes.

Methods

The present recognition of the importance of method in teaching the manual arts marks another advance in this field. The mature worker would have difficulty in consciously formulating the methods of his early work.

Today most careful consideration is given to every detail of the ways and means of successfully adapting the work to the needs of pupils and presenting it to the class.

Broadly speaking, we recognize two general procedures as the basis of our methods in manual arts work:

First, the individual or craftsman method of production. This method has been accepted since the beginning of the work. By its means the pupil as an individual organizes, develops and completes a project or piece of work. It presents the most effective means of acquiring a knowledge and mastery of tools and fundamental processes, of providing opportunity for originality and initiative, and for development of appreciation and the creative impulse. It is basic and the successful conduct of the manual arts work depends upon it.

Second, the method of quantity production. This is a simulation of the methods of industry. By this mode individuals of a group cooperate in contributing their part to the construction of a complete project consisting of a number of similar units. The educational value of this work is the first consideration. Opportunity is given for the development of ideals and objectives through the discipline of organization and cooperation, and through the many opportunities for the development of individual aptitudes and abilities in planning and leadership. Incident to this method a large amount of knowledge may be acquired which has informational and social value and which may be made a means of educational and vocational guidance. Ordinarily the purposes of the manual arts courses are more easily and effectively accomplished through the individual method of production and instruction.

Incident to the development of both of these methods are the many teaching devices which consciously multiply contacts between teacher and pupils and which are essential to successful instruction in the manual arts:

Group or class instruction, including brief talks upon the actual work or related subjects and information; general conference with discussion, questions and answers; presentation of reports on assigned tasks or problems; presentation of principles of design, with illustration and appreciation; demonstration, primarily to show how things are done. Individual instruction, including special help, advice and demonstration; meeting the demands of special interests; individual criticism and help in design of projects; individual assignments; the use of individual instruction material or instruction sheets. Accessory teaching devices, including the use of illustrative material, such as references, pictures, maps, charts, pamphlets, catalogs, exhibits, drawings, models, lantern slides, moving pictures; and under special conditions, visits to building projects, shops and factories and commercial exhibits.

Another important point pertaining to methods is the correlation of the work with other school subjects. Contacts are numerous, and abundant opportunities may be found for concrete expression through the manual arts. This work should render an important service in furnishing a great variety of problems and illustrative material for use in connection with other school subjects, and through cooperative relationship with other departments of the school. Such proj-

ects as the making and publishing of books, school papers, school dramatics and pageants, Christmas projects, school club work, projects of service to the school and community, and the like, provide material for interrelated work in which the manual arts will play an important part.

Individual Instruction Sheets

Individual instruction material is one of the newer devices in methods which promises to play an important part in manual arts teaching. Properly written and properly used instruction sheets present many possibilities as a means of instruction. By their use a greater variety of work is practicable; the time of both teacher and pupils is conserved; they recognize a wide range in the learning abilities of individuals and make possible individual progress; they arouse interest and develop resourcefulness; they are valuable aids to the demonstration and to its follow-up; above all, they suggest unlimited possibilities in meeting the impending problem of larger classes. It must, however, constantly be kept in mind that instruction sheets are a teaching device and that their values are contingent upon superior work in organization of the subject matter involved, and upon the efficiency of their use by the teacher. Constantly improving instruction material is coming from many sources.

Measuring Achievement

This is a problem of present concern in the field of manual arts teaching in which progress has been slow and results are admittedly inadequate. Several reasons may be suggested for this apparent lack of development in a field of educational endeavor in which otherwise there has been significant advance.

The early essay type of testing has never satisfactorily met the requirements of the manual arts; the work has been accepted as largely manipulative in character, and material results often have been mistaken for accomplishment; the comparative newness of the work, and particularly of some of the subjects taught, has delayed standardization, both in content and methods; there have been no definitely determined standards of achievement in the various manual arts subjects which could be accepted as a basis for judgment in testing; it is difficult to determine what the pupils should be expected to know, and be able to do in some of the subjects of more recent adoption; the wide diversity of subject matter in different localities and communities has added to the difficulty of fixing standards of measurement that are of universal application; it is only within a relatively short time that the manual arts have had serious consideration in institutions of higher education and for the training of teachers, and that there has been anything like the scientific study given to other departments of school work; teachers have not had opportunity for experience and training in scientific methods and have, of necessity, confined their efforts to individual and traditional methods of testing. Those who have been progressive are pioneers in the work, finding little to help in blazing new trails.

A number of excellent tests are now available in several of the manual arts subjects, and these are being used with good results by many forward-looking teachers. The technic of test-

making is becoming familiar, and with the clearer understanding of objectives, and more definite determination of subject content and methods, an adequate testing program is not far distant. Such a program is essential to a just and sufficient measure of achievement on the part of both pupil and teacher, to the guidance of the teacher in the organization and development of his courses of study, and to the improvement of his methods of teaching.

The Teacher

The teacher is unquestionably the most important factor in the manual arts problem, and this fact is being increasingly recognized. Formerly he was an isolated teacher of an isolated subject, with little or no special preparation for his work beyond a few skills, often of questionable value. Today he has become an important factor in a large and intricate organization, a teacher among teachers of other subjects, with the responsibility of placing himself and his work upon an equal social and educational level with other departments of his school. His special training and abilities make him an important factor in the organization and conduct of the school. He is the man of skills and action where concrete expression is demanded, and his abilities are recognized in the demands upon him in the duties of the school and in preparation for his work. It is now generally required that he have educational equipment equal or equivalent to that of other teachers of the same grade, and he is meeting the requirement, either in preparation for entering the work or in upgrading his work in service.

Again, the importance of the teacher is recognized in institutions for higher education and the preparation of teachers. It is now possible in many universities to secure degrees, undergraduate and graduate, majoring in the field of industrial education, and many teachers are taking advantage of these opportunities. Leadership is developing among workers in the industrial arts field which challenges the attention and admiration of the best minds in educational work and thought.

Many problems of the industrial arts are yet unsolved and there will be many others to solve, but to those who span in personal experience the history of the work in the public schools, there is naught but hopefulness and encouragement for the future.

THE GENERAL SHOP

Louis V. Newkirk

CHICAGO NORMAL SCHOOL, CHICAGO, ILLINOIS

Whatever one's attitude may be toward the latest development in industrial arts at the junior high school level, he will find Dr. Newkirk's authoritative article an aid to clear thinking about this important phase of modern education.

THE general shop is the modernized industrial arts concept. It is not fundamentally analogous to a series of unit shops, but is a new concept in the industrial arts field with special functions to perform in giving pupils educative industrial arts experience of a sort which the typical unit shop was never intended to give. It is not just a room with equipment suitable for working several types of material. It is the reorganization of shop work in the light of modern educational philosophy and research studies of individual pupils and their needs. In small communities and in small schools in large communities, general shop instruction is usually offered in one room equipped to work several materials. This is commonly known as a comprehensive general shop. In the larger schools in the largest cities there is a tendency to attempt the realization of the general shop concept by housing the equipment for working the various materials in separate rooms. For very large schools where it is necessary to have five or six shops in one building, this may be a more convenient administrative procedure, but it does not give the pupil the freedom that the comprehensive type does and may result in a stiff-legged type of instruction.

The following objectives are acceptable for the general shop in the elementary school and the junior high school. These objectives are not completely realized in the general shop, but it contributes an important part along with the other subjects of the curriculum.

1. *Handy-man abilities.* A knowledge of how to use simple hand tools in making repairs and adjustments about the home and its surroundings is valuable information. This knowledge and ability is good economy and it means better and longer service from the home and its equipment with less depreciation.

2. *Consumer's values and appreciation.* The majority of individuals buy the commodities ready-made which they consume. This means that an appreciation of quality and value in the products of industry and the trades is of value. Ability to appreciate industrial products adds interest to life even when they are not purchased.

3. *Guidance — Educational and Vocational.* The general shop gives the pupil opportunity to work with a number of different types of material and tools. Much information about industry and its workers is available. Tests of mechanical ability may be used to aid in determining aptitude. This information is particularly valuable in the guidance program.

4. *Leisure-time activities.* The general shop offers many opportunities for the broadening of interests and development of hobbies. Some have home workshops in which they make simple articles and furniture for the home; others experiment with radio; still others may be interested in model ships or perhaps doing the repair work on the family car. Some may not care to work with tools but will become interested in reading about industry and its work.

5. *Physiological development.* It offers many pupils their only opportunity to manipulate tools and materials. It is the opinion of psychologists that growing boys and girls develop better coordination and are healthier mentally when allowed a good deal of manipulative experience.

6. *Social development.* There are many opportunities in the general shop for pupils to work together. There is opportunity for placing responsibility on different members of the class in conducting the shop and taking care of equipment and supplies. This gives the teacher an excellent opportunity to develop desirable social habits and to curb the less desirable.

7. *Motivating and vitalizing agent in the school.* The general shop may be a big factor in keeping the other subjects of the curriculum in touch with reality. It offers many opportunities for motivating and making realistic the work of the social sciences, English, science, geography and mathematics.

8. *Planning.* In executing projects in the general shop there are opportunities for planning individual work. Well-established habits of analyzing and planning are of value.

The general shop is the answer that many industrial arts teachers and supervisors are giving to the demands of modern-day educators for an educative industrial arts program. The general shop will enable the teacher to help realize present-day aims of education and to correlate his work with the other subject-matter in the school.

The general shop eludes short, concise definitions because it is complex. The following characteristics of the general shop, when viewed together, aid in giving a picture of this new industrial-arts concept.

1. It is usually taught in one room under one instructor.

2. It is often equipped with a wide variety of tools for working several types of materials—wood, metal, clay, paper, leather and glass.

3. Projects may be undertaken which require the use of several different materials.

4. The pupil is given an opportunity to advance at rates in keeping with his ability and interests.

5. The arrangement of the equipment is kept flexible.

6. The objectives of the general shop are based primarily on general education.

7. The skills, information and social habits taught are based on present and future needs of pupils regardless of vocation.

8. It requires a careful organization of instructional materials, supplies and equipment.

9. It gives the small school an opportunity to offer a modern industrial-arts program with the money available for teacher's salary, supplies and equipment.

10. The general shop teacher must

be able to work a number of different materials and have a good background of cultural, professional and technical training.

It has been pointed out by some workers that the words "general" and "shop" when defined according to the dictionary do not have any very significant meaning. It is well to remember, however, that letters and words are symbols and the meaning they have depends on what we have associated with them. Since it has been common practice to associate the new industrial-arts concept with the words "general shop," it seems ill-advised to change the terminology.

As the general shop has been developing over the country different emphasis has been placed on certain objectives. This has resulted in types of general shops with like characteristics. These might be termed "unbalanced" general shops because they have allowed one or two objectives to dominate the instruction offered and have failed to realize all of the educational possibilities that the general shop offers. Examples of these are the home-mechanics shop, which usually puts undue emphasis on handyman abilities, and the trades exploratory which is designed primarily to allow the pupil to manipulate tools and materials representative of several common trades. In themselves, handy-man abilities and guidance are excellent objectives, but these objectives can be realized, and at the same time realize the other objectives of the general shop. Another type of "unbalanced" general shop is one in which one type of material is allowed to monopolize most of the pupil's time. Perhaps the greatest offender is wood. It lends itself very well to shop work, but when it is allowed to crowd out metal, clay, leather, paper and glass, it limits the educational possibilities of the general shop. It is the opinion of the writer that the best general shops are those which base their instruction on all of the major objectives and common construction materials.

There are several factors which are still clouding the general shop concept and causing misunderstanding on the part of some administrators and industrial-arts teachers. First, the general shop has frequently been defined in the light of its most obvious physical characteristic; namely, that it is usually taught in one room under one teacher with facilities for working the common construction materials—wood, clay, metal, paper and glass. Second, numerous teachers are still attempting to house a number of small unit trade shops in one room and conduct them simultaneously. Third, a failure to realize that the general shop is a modern industrial-arts concept based on fundamental objectives of modern education. Fourth, the general shop is not a special subject outside the regular curriculum. It is a vitalizing, educative subject which can be correlated with English, social science, physical science and mathematics. The time is here for industrial arts to become a full-fledged subject and make its contribution toward a well-rounded educative program.

The general shop is so broad and interesting a concept that it is natural that some of its characteristics, particularly the physical ones, have been mistaken for the entire concept. The fact that the equipment and materials are already available and that much of the instructional material is still to

be worked out, has naturally lead to the assumption that the shop organization is the general shop.

The general shop does not demand that trade divisions are necessary in its organization. General shops that are dominated by trade divisions are still carrying the scars of the unit shop and are handicapping themselves for the realization of the broad educational content which is their heritage. The room in which a general shop is taught should be flexible, allowing the teacher and pupils to work with any type of instructional material or project that is in keeping with the objectives of the general shop. It is the opinion of the writer that the sooner the idea of trade divisions can be divorced from the general shop, the sooner the new industrial-arts concept will be permitted to function as a correlated unit in the process of education. The general shop as it is commonly conceived is not a trade course, but a broadening, finding and cultural course. Culture being defined as not only including literature, science, mathematics and fine arts, but also ability to understand, manipulate and adjust the many mechanical devices which are constantly about us and to appreciate the products of industry and its workers.

The general shop is excellent for the industrial-arts work in the elementary school and the junior high school. Certain modified types are finding a place in some senior high schools and as beginning courses in trade and continuation schools. Educators and teachers may confidentially expect even better results from the industrial arts program of the future. There are many well-trained teachers and excellent shops in the public schools. Teacher-training units have been organized in many leading teachers colleges. Graduate centers have been developed in several universities. Marked progress is being made in the reorganization of instructional materials and teaching methods.

In summary it may be said that the general shop is a broad group of educative industrial-arts activities embracing techniques of shop organization and teaching method which enables a community, whether large or small, to present a unified core of content based on life needs as summarized in these aims: appreciation of industry and its workers, handy-man abilities, consumer's knowledge and appreciation, guidance, hobbies, physiological development and desirable social and mental habits.

It is not the purpose of this article to give methods of establishing and procedures in conducting a general shop, but for those who are interested in further study, the following references are recommended.

Bedell, Earl L., "Household Mechanics and the General Shop," *Industrial Education Magazine,* July, 1923, pp. 14-16.

Newkirk, Louis V., and Stoddard, George D., *The General Shop,* Manual Arts Press, Peoria, Illinois, 190 pp. 1919.

Newkirk, Louis V., *Course of Study in Practical Mechanics,* University of Iowa Extension Bulletin, No. 146. State Unverisity of Iowa, Iowa City, Iowa, 1926.

Newkirk, Louis V., and Stoddard, George D., "The Teaching Content and Objective Testing in Home Mechanics," *Industrial Arts Magazine,* February, 1928, pp. 47-50.

Newkirk, Louis V., *Validating and Testing Home Mechanics Content,* University of Iowa Studies in Education,

State University of Iowa, Iowa City, Iowa, 1931.

Profitt, Maris M., *The General Shop,* United States Department of the Interior, Education Bulletin, No. 30.

Schoenike, E. L., and Van Duzee, Roy R., "The Teaching of Home Mechanics," *Industrial Arts and Vocational Education Magazine,* The Bruce Publishing Company, Milwaukee, Wisconsin, Vol. 19, June, 1930, pp. 205-210.

Snedden, David, and Warner, William E., *Reconstruction of Industrial Arts Courses,* Bureau of Publications, Teachers College, Columbia University, New York City, 1927.

Warner, William E., *Activities Centered Around the General Industrial Arts Laboratory,* Educational Research Bulletin, 7: 15-17, January 11, 1928.

Warner, William E., "Establishing the General Shop," *Industrial Arts and Vocational Education Magazine,* The Bruce Publishing Co., Vol. 19, August, 1930. Part I, pp. 287-290. Part II, Vol. 19, September, pp. 344-346. Part III, Vol. 19, October, pp. 374-376. Part IV, Vol. 19, November, pp. 420-423.

INDUSTRIAL ARTS PROBLEMS NEEDING STUDY

WILLIAM E. WARNER

THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO

Those teachers who possess a sense of obligation to aid in the search for truth will find Dr. Warner's challenge more than suggestive. The research needed in the field of industrial arts is set out in most practical form in this presentation.

THE seriousness of the present topic is seen in the citing of an instance where a young man graduate of a department of Industrial Arts in a Middle Western school began his graduate work in a department of "school administration." When asked why he did not go on in Industrial Arts, he replied in effect that he did not see any problems in Industrial Arts which would be appropriate for a Master's thesis. The humor of this incident is seen in a recognition of the broad range of possibilities for research in Industrial Arts Education. Dr. Homer J. Smith of the University of Minnesota has already brought out a volume listing a thousand problems for study. It is the purpose of the present article to list a few similar problems under major headings which it is hoped will prove suggestive to the individual shop teacher of something which needs studying and of something which he can do.

The present list is merely suggestive. The subject of Industrial Arts has been uppermost in mind while the list was constructed, although many of the points will be found to be suggestive of needed research in various other of the practical-arts fields.

Concepts. The topic of concepts refers to all the rest, and is listed separately and first simply because it is suggestive of what the industrial-arts teacher may do in the *identification* of topics for study. The teacher should ask himself, "What is my conception of the way a grade should be made? What is my conception of the name we should give a thing? What is my conception of the purpose of this work?" There are many hundreds of these concepts. They take various forms and are invariably good, bad, or indifferent. Whatever is done every day in industrial arts is based upon a concept, whether the

teacher is aware of it or not. The formulation, application, and testing of a number of true concepts for any given situation suggests extended research. As concepts mature into truths, with the advance of experimental and other research techniques, the scientific aspect of one's profession advances. Ability in this first type of study constitutes the first step of a graduate student or "master" teacher in industrial arts.

Objectives. Research in the field of industrial-arts objectives seems to be an ever-live topic, the reason being that as knowledge concerning the possibilities of any procedure improves, then will the objectives improve. There are seven or eight principal approaches which are basic to any major study of this topic. These would include a synthesis of the following: *historical* gleanings to note understandings and examples of work previously carried on which might be suggestive of best practices for the present; a study of *contemporary* example for the same purpose; a careful scrutiny of the writings and sayings of *modern-day philosophers* to see how they say shop work may be improved; *sociological* study to learn how the influence of life as it is found today should affect the content or subject-matter and method included in shop courses; *economic* examples and tendencies of what is found in industry and business as these may indicate objectives for procedure in shop work; *psychology* in its research laboratories frequently contributes facts concerning habits, skill, aptitude, attitude, appreciation, and the like, all of which are suggestive of objectives dealing with method and would seem to indicate a broad range of research; *physiological* studies as these affect the achievement of skill in shop work and as they are related to the neuromuscular development of young adolescents offers another field for study, the results of which should suggest objectives; and lastly, objectives can grow out of what may be designated as *functional* or follow-up studies, which serve frequently as the acid test of what good a thing has been by noting its outcome.

Nomenclature. The Western Arts Association has led in the study of nomenclature, or the naming of professional phases of industrial-arts teaching. At least two Master's theses have come out of this study. These are included in the following heads: an *etymological* study of word-roots; a study of *first professional uses* of terms; a study of *contemporary usage* in different places and by different organizations; an *analysis of terminological confusion* among shop teachers in any given area; an analysis of *published definitions* for their concepts; *psychological implications* of certain terms; terms representing *certain philosophical demands.* These and other approaches to the study of professional terms in the industrial-arts field should prove suggestive of what anyone can do toward the improvement of the use of terms.

Pupil Studies. No objective of *guidance* may be achieved, and it is difficult to understand how *exploration* could be said to have taken place in a shop setting, if individual pupils were not studied on every hand. Several researches suggest themselves. The first of these might well deal with certain psychological aspects of the pupil in a shop setting as studies of interests, capacity, habit, attitude, and

appreciations for certain phases of shop work, or as a result of certain phases of shop work. The second of these deals with physical aspects of the pupil, particularly when it is considered that he is an adolescent. What is his nature during this period? Reference is made to his capacity for work, to his achievement of skill, to his reaction times and learning, as well as to posture in tool manipulation and the whole range of physical experiences usually designated as developmental, which have to do with design, spatial conceptions, and the like. A third set of pupil studies may well deal with certain social points. These include habits, interests, ability to adapt oneself, ability to get along with other people, ability to mature as a result of experiences, and the facility with which one learns to take responsibility. A fourth heading suggests an important outcome of pupil studies for the teacher and may be included under the heading of prognoses. These may well be made as a result of pupil study. A check on these suggests a fifth, namely follow-up, which when made, should enable any shop teacher to improve on the first four.

Teacher Studies. If one should study the pupil, he should even more surely study the teacher. A doctor's dissertation is under way on the topic of selecting the teacher, which carries the problem further back than that of training the teacher. In times of depression and in the future there should be increasing attention given to supply and demand studies. The selection of teachers for training should certainly give attention to the analysis of certain desirable traits which all teachers should possess as well as to desirable secondary-school preparation and certain fundamental technical experiences. The preparation of teachers will increasingly give attention to not only technical courses and experiences, but the achievement of professional subject-matter, and cultural growth as well.

Content. There is no more important topic for research in the industrial-arts field than this one. From an industrial-arts viewpoint there are some ten or twelve principal or common phases of work which suggest topics for the study of content. The writer's *Policies* book, however, reports some sixty-three types of content found in industrial-arts settings in the United States. Still others, no doubt, could be listed and studied. From a trade and industrial education viewpoint the problem of content derivation is practically limitless, depending only on the number of such vocations for which persons need to be trained. The analysis by MacDonald is a case in point of the way special phases of content training are found in the trade field. His dissertation is on *Analysis of the Single-Color Offset Pressman's Trade.* Jones, Bowman, Brahdy, Browman, Hennick, and Pickett have developed further studies of this sort in the vocational field.

The problem of content, or what subject-matter to present, is too frequently controlled by the example of an existing textbook or custom; particularly is this seen in the fields of woodworking and drawing. Drawing in secondary schools has been dominated for years by an *engineering* conception of drawing. A social approach to the study of drawing should first of all portray what drawing is

found to affect everyone. It may be that topographical, lettering, descriptive, and narrative drawing are all as essential as orthographic and geometric phases of drawing more common to the engineering fields. The industrial-arts scholar may also find that drawing, from the angle of design, should be more applied in content than it now is. If materials are to be manipulated in other phases of shop work, then it may be that drawing has a real place in the manipulation of these materials.

Method. It is nothing unusual for a student to ask, "What is the one best method of doing this thing?" The folly of such a view may be seen in the early recognition of many, many methods which may be referred to as good ways of doing things in various situations. It is the study of the suitability of various methods for certain specific situations and the measure of resulting outcomes that suggests a range of unusually significant research problems. Witness the Gunther and Collings dissertations.

From a strictly vocational angle the range of method study would seem to be somewhat more restricted and specific than from the angle of practical arts. The following methods chosen from the industrial-arts field suggest a few for either individual or experimental (comparable) study: demonstration, discussion, planning, judging, exhibits, manipulations, problem materials, job materials, exercises, excursions, observations, dictations, experimentations, imitation and copy, grading (formal or profile), etc.

Research in the field of *devices* in all phases of shop work offers much opportunity. A few typical studies suggestive of analysis and comparison concerning devices are seen in the study of record forms, the show case, film strips, manufacturers' exhibits, signs, phonograph records, tests, instruction sheets, models and model making, which may be supplemented under the heading of organization, discussed a little later.

Planning. At present with the growing complexity of physical settings — shops, laboratories, drawing and design studios, guidance clinics, and the like—where so many kinds of content are achieved side by side, there would seem to be no more important problem than that of shop or physical *planning.* The outline for such a basic study in the industrial-arts field is suggested by the following nine headings, any one of which may include at least one Master's thesis. In fact, at least one of the list is now under way as a Master's thesis. The headings include place and location of shops, size and shape of shops, building details, service features, both natural and artificial lighting, noise prevention and reduction, the problem of principal rooms, auxiliary facilities or rooms, and major equipment provisions.

So little is known of these topics: How much light should be available at bench height for woodworking, hand composition, or drawing? In general shops where there is likely to be confusion owing to the wide range of activities going on, what are the ways of reducing noise? Is there any way of making a circular saw quieter? Is there any necessity for having windows in a shop? Should shops be restricted to one kind of floor? Should shops ever be wider than a classroom

width? These and many other problems are now being scrutinized by leaders in industrial arts. Their solutions will come on every hand for the benefit of the industrial-arts profession if every individual shop teacher bends his efforts toward their study in his own shop.

Organization. As a young shop teacher, the writer frequently heard the word "organization." He was not quite sure as he mastered his subject-matter, what was meant by the word "organization," and whether anything should be done about it. He did not at first see that organization was necessary to the achievement of content. It may be that some of the following topics will suggest research: the assignment of students to various areas in a shop; the development of a personnel organization as in industry for the administration of a laboratory plan; the formulation of instructional and reference materials; the development of a best plan for running jobs through on production schedule; the development of displays and exhibits; the taking of field trips; the laying out or grouping of equipment in the best manner; the formulation and conduct of a testing program; the handling of projects in process of construction; the storage and distribution of tools and supplies; the operation of a perpetual inventory; the development of necessary records, including attendance and the determining of costs. These are but a few of the various topics which are essential if progress is to be made under the heading of organization.

Administration and Supervision. Following any consideration of the problems to be studied under the heading of organization comes a similar listing of those under administration and supervision. The writer has frequently said that organization should be effected to facilitate administration. The statement is equally true with reference to supervision. It may be that supervision means the carrying out of proper organization. No one escapes this phase. It is not only a function of state, city, departmental, and teacher-training divisions, but equally an everyday function of the individual shop teacher as well.

Very little has been accomplished on the subject of supervision in the industrial-arts field. No single reference is recalled which helps break the topic down. Fintz in a very clever study with the shop teachers of Cleveland has gotten into what will amount to a dissertation in his development of techniques and tests—from the angle of city supervision—concerning what he calls *Organization of Instruction Material for General Shop in Junior High Schools.* Among other things Fintz discovers that master teachers of similar subjects, while teaching similar operations and dealing in similar elements of content, do not agree upon basically similar designations concerning such work. There is much still to be done.

Tests and Scales. This topic deals mainly with the construction and standardization of industrial-arts tests. The principal reference on the topic is found in the *Symposium on Testing* directed by the writer and written by Osburn, Bollinger, Hunt, H. J. Smith, Sharp, Schwanzle, Newkirk, and Fryklund, and published in the *Epsilon Pi Tau Review* for 1931. The following fourteen chapter heads

used in this symposium may be suggestive of further study: a professional view of testing; historical development of tests; purposes of tests; classes of tests; types of test elements; criteria for evaluating tests; construction of paper tests; construction of performance tests; rating scales; giving and scoring tests; interpreting test results; the test program; a glossary of testing terms; selected bibliographies. An example of the detailed investigation involving the use of testing is seen in the noteworthy research investigation report known as the *Minnesota Mechanical Ability Tests* by Patterson and others. This document is suggestive of best scientific style in recording the results of research effort.

The whole topic of achievement in industrial-arts classes may well follow along in the category of tests and scales. Yet achievement cuts across other topics, notably: concepts objectives, pupil study, and surveys. It deals mainly with the whole problem of outcome. It affords opportunity for a wide range of theses, and techniques are suggested not only by tests and scales, but surveys, questionnaires, follow-ups, and observations as well. Things to be studied involve skills, appreciations, habits, attitudes, abilities, informations, and knowledges.

Restricted space has made it necessary to confine the above discussion to a suggestion of topics which may be considered as major topics of investigation in the industrial-arts field. A whole series of minor topics might follow, of which a translation, the study of one man's work, the graphic portrayal of a program, or a bibliographical listing of sources are but suggestive. It would seem fair to say that the industrial-arts profession will advance with the ability of individual teachers in that profession to recognize and cope with the hundreds of industrial-arts problems needing study, a few of which have been suggested by this article.

THE INDUSTRIAL ARTS TEACHER'S RESPONSIBILITY

HOMER J. SMITH
PROFESSOR OF INDUSTRIAL EDUCATION
UNIVERSITY OF MINNESOTA

Dr. Smith has made very specific the significance of the contribution to general education made by the industrial-arts teacher, and indicates clearly the extremely complex character of purposeful industrial-arts teaching.

EACH *unit of the school system* (such as the elementary school) has a peculiar purpose to perform or a particular part to play in the education of our youth, for their individual development and for their collective social influence. Likewise, *each department of each unit* (such as science in the senior high school) has a contribution to make to the fulfillment of the aims of the unit as well as of the complete educational program. Further, no *single subject of study* deserves place in a department

unless a positive argument can be made for it in two distinct respects; namely, that it will afford an experience dissimilar to what may be gained from other subjects, and that this experience is in keeping with the aims of the unit concerned.

It follows, logically, that the maintenance of industrial courses in our public schools must be clearly justified if these are to hold place, and that the responsibilities of industrial teachers must be explained if they are to be understood and appreciated. It is the purpose of this brief article to extend such justification and such appreciation. Our title suggests that these special teachers have peculiar provinces and functions with which many of their fellow-workers may wish to become more familiar.

A New Emphasis on Purposes

Writers in this special field have materially altered their handling of the purposes in recent years. A canvass of the literature concerning values of departments and courses has revealed abrupt and interesting changes occurring about 1920. Before that date a great many different aims were stated but they were commonly buried in discussions of equipment and management. They were far too numerous for listing here, approximately one hundred, and far too many and varied for any teacher or administrator to keep in mind for use. Recently the number has been greatly reduced, chiefly through grouping, and this reduction has served to bring values into relief. We now have several brief, numerical lists, each devoid of overlapping and confusion and each helpful in defining and clarifying our attempts. (Several authors represented in this special number have contributed to this happy result.) The tendency toward brevity and directness in the statement of purposes may be said to account in considerable degree for the increased acceptance of and the mounting respect for industrial-arts offerings and plans.

A second change has been even more important. Before 1920, our leaders made *claims* instead of stating *aims*. They told us what the courses had done or what the courses were doing. They made out a case. They did something and later attempted to justify the action. They spoke and wrote after the fact. They thought in the past and the present. We have now adopted a future or forward-looking technique. Today, we preface our courses with statements of purpose. It is no longer a matter of what Industrial Arts has done or is doing. It is a matter of what we are attempting, by a given procedure, to do. We are more lucid about our *whys* and we are making these *whys* clear to others in anticipation of their support and cooperation in the attainment.

The writer is pleased to submit Six Proposed Objectives which have been stressed in his work as a teacher "trainer" and which have influenced the conduct of this special work in his state. He is not entirely satisfied, eight years after publication, with this selection and wordings; nor does he offer the set as best to this date. The list does, however, sample those available and will serve to advance discussion of the duties of the type of teacher under consideration.

Six Proposed Objectives*
(General Industrial Training or Industrial Arts)

1. *To Develop Skill in the Use of Common Tools.*
   For more worthy home membership, avocational purposes, and general preliminary training.
2. *To Afford Industrial Information and Social Intelligence.*
   For a better understanding of the materials and processes of manufacture, the economic necessity and social usefulness of skillful labor, and the conditions and problems of industrial employment.
3. *To Foster Appreciation of Good Materials and Workmanship.*
   For intelligent and discriminating selection of manufactured products for home and business consumption, and for the proper valuation of substantial and beautiful constructions in the environment.
4. *To Further Intelligent Choices of Life Occupations.*
   For wider knowledge of the requirements of industrial jobs and positions, for better understanding of individual abilities and capacities, and for consciousness of the desirability of these two success factors being considered together.
5. *To Inculcate Worthy Personal Traits and Attitudes.*
   For the building of habits of industry, initiative, resourcefulness, independence, exactness, economy, and co-operativeness.
6. *To Provide a Measure of Specific Occupational Training.*
   For advantageous entrance upon and progress in suitable lines of work, when conditions point to early assumption of the responsibilities of earning a living.

It is taken for granted that industrial departments everywhere have been organized and are being supported for the attainment of some such ends. It is believed that some of the aims just listed are peculiarly those of the manual courses and that the others may be more surely and concretely fulfilled through industrial than through so-called general or academic subjects. To the degree that such a set of purposes is deemed different and desirable, to that extent is there admission of the necessity for this special type of work.

But, to accept a field or department as worthy and to recognize the distinctness of its responsibility may not assure full understanding of the methods and plans of its teachers. Thorough personal acquaintance with industrial instructors, as the months and school years pass, is not a guarantee that the manner of their teaching has been observed or apprehended. It seems not without appropriateness, therefore, that some detail of their duties be offered as a route to their higher esteem. They take the boys of a system or building, in many cases all of them, and seek in special ways to meet needs and to serve ends known and common to the whole profession.

Four Distinct Duties

First, industrial teachers must develop some *skills;* they must train their boys *to do* some things. By the use of tools, machines, materials, and processes they supervise construction and repair. Whatever the philosophy or the method of their endeavors, and these are reflections of their professional preparation, there is always the

* Smith, Homer J. "Industrial Education in the Public Schools of Minnesota: A Detailed Study of its History and Present Practice, with Suggestions." (1924) University of Minnesota Press, Minneapolis. Educ. Mono. No. 6. (Out of print.) See page 125.

physical product. The tangible outcomes of the exercise, the project, and the job are thought of as ends by the unknowing but industrial teachers view them rather as means to ends. They are merely the by-products or the vehicles of a scheme whereby doing and planning abilities are developed. They furnish opportunity for attainment of physical and mental growths or expansions not susceptible of quickening through other types of study. That similar activities may later be engaged in for pay by some boys does not make this work vocational nor subtract in any way from its necessity for all.

Industrial teachers, in analyzing their subjects, make long lists of things that may be *done*. From these lists of manipulative elements they select a few to match group needs and the time at their disposal. Courses are organized in different ways but some of the skillful things are usually given more attention than others, being brought more often into the assignments or isolated for purposive drill. It may be said that every industrial teacher develops skills of two kinds; some which are simple and merely watched in the coming, others which require much repetition under control until a pre-determined standard has been reached.

Second, industrial teachers must impart some *informations;* they must aid their boys *to know* some things. As a matter of fact many industrial teachers place greater emphasis upon the knowledge aspects of their subjects than upon the skills. More teachers would do so, to the great improvement of their work, if superiors, patrons, and students were not so grounded in expectancy of product. Many teachers dare not reduce the shop output, even though they know that shading this in deference to more learning would be a wiser course. By the use of lectures, textbooks, assigned readings, homework, excursions and the like they could make more rapid and more certain linking with the objectives of their work.

Informational content may be roughly classified into three types, some one of which is commonly overlooked or slighted. (1) There is a certain kind of information that must be supplied in order that acceptable product may result and that injury to persons and property may be avoided. (Example:— the grinding of tools, the handling of machines, the kinds of joints, the reading of drawings, and the application of finishes.) All industrial teachers impart this type of related material although they differ greatly in the value which they assign to it and in the plans which they develop for its convenient and attractive presentation. (2) A second brand of information may be characterized as not absolutely necessary to the work in hand but broadening and cultural in effect. (Example: the identification of woods, the steel-making process, properties of materials, and principles of design.) Here, again, teachers vary in their interest and in the time devoted but it is doubtful if one-tenth of them give the deserved emphasis to this type of information. (3) Each instructor has the responsibility of imparting guidance information regarding the working fields represented by his subject. There is no necessity for extended and detailed description of the occupation

being sampled but, in as much as "exploration" is one of our avowed aims, it should be realized that direct instruction is required and that boys may get impressions from the school shop that need systematic correction. From the analyses mentioned earlier and from their margins of experience, good teachers select information of at least three kinds and develop it by use of the most vital methods of which they are capable.

Third, industrial teachers must stimulate some *appreciations;* they must bring their boys *to feel* some things. Just as teachers of literature motivate reading of the best through tactful selection, excellent illustration, and definite discussion of standards, so should industrial teachers elicit emotional reactions to the best things in their lines. Good instructors in music display rare skills, acquaint pupils with great compositions, and build halos for certain composers. They help their students to identify fine movements, themes, and harmonies, never neglecting to interest them in the special or high techniques involved. In like manner industrial teachers should exhibit techniques, and seek to stimulate enthusiasm about original designs, sturdy construction, excellent materials, exact and easy craftsmanship, and the beautiful finished product. Tight joints, smooth surfaces, harmonious color effects, and the like are ends to earn and things to be felt and appreciated. Accuracy, speed, and dexterity may be made to seem high attainments. This aspect of our service needs careful building, not alone for its effect upon individual boys but for its ultimate use in extending pride in handiwork and increasing the number of occupations which boys will think suitable as careers. We must teach respect not only for good product but for the higher types of skill.

Fourth, industrial teachers must build some *attitudes;* they must encourage their boys *to act* in manly ways. Naturally, this is the charge of teachers of all subjects but none are more fortunate in the situation required than are the industrial teachers. The conditions and environment of their work are especially conducive to results in the realm of attitude. They improve respect for property, both personal and public; they lead to fine cooperative endeavor; they provide trials in leadership and followership alike; they interest boys in self-improvement; and they picture the most approved and gainful relationships of later employment experience. These attitudes are often too lightly regarded and too seldom a part of our conscious instruction.

Skills, informations, appreciations, and attitudes (doing, knowing, feeling, acting)—there are the wares or the duties of every teacher. They are the unavoidable responsibilities of industrial teachers. Who would be found shirking any of them? Who will affirm that one type of teacher has better claim than another to their true and fruitful attainment? Who is unable to sense the peculiar efficacy of the industrial subjects for contributing through these means? It is all a matter of viewpoint and daily application. The desire is strong and widespread that industrial teachers will accept this four-fold responsibility and that their fellow-workers will acknowledge the probability of their equality in social service as they seek to perfect their plans.

THE EVOLUTION OF THE INDUSTRIAL-ARTS TEACHER TO PROFESSIONAL STATUS

A. C. Newell

DIRECTOR, DIVISION OF INDUSTRIAL EDUCATION
ILLINOIS STATE NORMAL UNIVERSITY, NORMAL, ILLINOIS

This careful analysis of the sources of supply of industrial-arts teachers and the practical suggestions for self-development will be of interest both to teachers and to administrative officers.

THE evolution of the industrial-arts teacher is an interesting story of progress. Interesting, because it shows struggle, experimentation, inventiveness and the slow development of a new type of teaching and a new division of school education. Step by step educators have attempted to introduce the practical arts into the school. A slowly-growing faith on the part of school men has been unfolded, based on the belief that practical arts properly taught possess high educative value and that it functions both educationally and vocationally in the lives of children.

The industrial-arts courses of today are vastly different in content and method from the shopwork, Russian joinery, or sloyd of a few years ago. Various plans and theories have been tried, and successes and weaknesses or failures have been discovered by experience. A conservative but generous and hopeful public, which has possessed a burning determination to have the best possible education for its sons and daughters has furnished splendid equipment and buildings.

The teachers of subjects that were formerly listed under the general heading, manual training, have been men (and occasionally women) of high professional spirit but who often lacked proper training for their work. These teachers have been pioneers developing a new field and in some respects a new technique of teaching. They have gone through all the struggles and difficulties of pioneers and out of their work — the old formal manual training of a generation or two ago—has come our industrial arts or manual arts of today. The coming of the factory system destroyed the craft-guilds, and with their fall went apprenticeship and any adequate training for craftsmanship. The proper preparation of an industrial-arts teacher has also been difficult to obtain because of the lack of organized methods for training craftsmen, and also owing to the fact that there had not been developed until recently any pedagogy of industrial arts, or methodology of procedure, for teaching crafts.

Trades during recent years have often been "stolen" or picked up by workmen, especially in crafts where helpers are not employed. No journeymen have been trained in many of the factory trades particularly, and this lack of apprenticeship has caused young workmen to apply for work on machines or jobs that they knew little

about. Failure and loss of position followed, but experience was gained little by little and numerous jobs and types of work brought increased skill. Slowly a factory hand "picked up" or "stole" a trade. Recently the vestibule school in industry has improved this condition somewhat.

The industrial-arts teacher of today often has to "steal" parts of trades from industry by working at various crafts during vacations, or sometimes he can secure experience and training openly through cooperation with industry. Parts of some of the trades are unsuitable for school use and need not be learned by an industrial-arts teacher. In general, well-equipped schools can give courses in the fundamentals of various crafts, and many of the laborious uneducative processes of industry are intentionally and profitably omitted.

Types of industrial-arts teachers.

Three types of teachers have been employed to teach what we now call industrial arts. The following list is probably placed in the correct chronological order of their appearance:

1. The skilled craftsman teacher—a journeyman or mechanic trained in industry.
2. The engineering-college graduate teacher.
3. The normal school, teachers college, or school of education graduate teacher.

A short comparison of the three types of teachers may indicate the proper lines of training and self-improvement for prospective and experienced teachers.

The craftsman teacher.

The craftsman teacher probably appeared first, perhaps in engineering or agricultural colleges which introduced shopwork under the encouragement offered through the land grants from the Morrill Act of 1862.

Personal skill, knowledge of subject-matter, and experience in production were valuable assets of the craftsman teacher. His practical experience in production in some trade from which he received more or less money developed in him an acute appreciation of time value which is not at all understood by the average student in school. The craftsman teacher often was selected from a group of tradesmen on account of his high skill. Usually, or at least frequently, his skill was in one trade only.

The craftsman teacher was handicapped by many weaknesses because he usually lacked a college education; he knew nothing of teaching skills, such as school management, discipline, and methods of teaching; his early environment had not developed in him the much-prized personal qualities of the educated and cultured; he did not usually possess the scholar's attitude toward study and the acquirement of related information; he was not ordinarily a person of wide reading or a research worker; and to cap the climax he had been trained as a worker rather than as a person who was to direct others in their work.

The engineering-college graduate teacher.

The second of the teacher types to attempt the teaching of crafts was composed of graduates of engineering colleges. The first of these teachers were taught craft work by tradesman teachers. The engineering-college student did not specialize in a single

craft but was given a variety of courses in wood and metal which were designed primarily to assist an engineer in designing and supervising engineering construction.

The graduate engineer possessed some excellent qualifications for supervising craft work, but he was not a trained teacher. Among his strong points or good qualities as a teacher that might be mentioned are: he had obtained a superior background of science, mathematics, and mechanical drawing; he had received a good general college education and had been trained to think; he had been taught how to attack and solve problems, and to design projects and to plan work; he had acquired considerable knowledge of various types of craftwork and a limited constructive skill along these lines of trade work; and, perhaps most important of all, he had been trained as an organizer and supervisor of the work of other people.

Some of the men who have risen to distinction in the industrial-arts field of today were trained as engineers in college. They were men of intellectual power, strong personality, and ability to meet and solve new and perplexing problems.

Weak points in the training which the engineering-school graduate received are obvious to the professionally trained educator. It is evident that he lacked teacher training, and the enriching and yet devocationalizing influence of psychology. He knew nothing of the school teaching arts and skills, such as a knowledge of discipline, school-shop management, or the fine art of skilful lesson preparation and presentation. The engineering-college graduate teacher had received no college training in what we now call job or trade analysis; but he had been taught that he must accept and solve difficult problems, and this training gave him unusual analyzing and organizing ability in the newly developed industrial-arts teaching field. He had obtained training in the fundamentals of trade practices along several lines, but he knew little of time value or commercial production. In general, he was a resourceful man with an open and inquiring mind ready to meet any emergency, but he often lacked wide knowledge and experience in subject-matter. His college training usually made him an ambitious student who became a man of wide reading and a person who could adapt himself to the exigencies of his calling.

There is no intention in this article of painting an aureole or halo about the heads of engineering college industrial-arts teachers. There were fundamental weaknesses in their training. They were compelled to do college graduate study or secure teacher training in some way in order to meet present-day qualifications for teaching in high schools and colleges.

The normal school, teachers college, or university school of education graduate teacher.

The third of the three types of industrial-arts teachers might for brevity be called the teacher trained teacher. Some of the most successful men in the industrial-arts field have been employed in teachers colleges and universities for the purpose of training teachers in the most efficient manner for teaching industrial arts. Instructors having this type of train-

ing are now almost the only ones who can meet present-day qualifications without further training.

The special advantages that one from this type of teachers possesses over others come from his training in methods of teaching and his study of psychology which should make him a teacher and give him a knowledge of the laws of learning. Such a teacher understands at the beginning of his teaching career something of class management, shop discipline and shop organization. He possesses a good general education; he has taken shop courses based on several of the more important trades; he has studied design and problem solving; he has been trained to analyze teaching materials into suitable units for teaching; and he has been trained to teach in a practice school under the exacting supervision of a critic teacher usually of good training and experience. Such a teacher during his college life generally develops a superior teaching personality.

The rigid training required during a four-year college course for the preparation of industrial-arts teachers generally enables a graduate to meet the qualifications for industrial-arts instructors which should equal those considered indispensable for other teachers doing high-school work.

Some weaknesses have appeared in the qualifications of the teacher-trained teacher. Such an instructor usually lacks contact with real trade conditions; he generally has not developen an expert's skill for production in any trade; he does not realize the value of time in production but generally teaches good methods of work; and, although he may know all the tricks of the teaching profession, he is apt to be short in personal trade skills and detailed trade subject-matter. He may not know definitely from contact with industry the best subject-matter to teach in school to prepare for vocational life, but generally he does select material that is valuable educationally.

Minimum essentials for industrial-arts teaching.

Formerly it was thought by some people that skill and experience in some trade on the one hand, or a six-weeks course in a summer school as another extreme, were all the preparation that a person needed to teach the old type of formal manual training. Recently it has become evident that no type of training has yet been offered that can fully prepare a person in four years for teaching our present-day type of industrial arts.

The minimum irreducible essentials for satisfactory industrial-arts teaching may be grouped under three headings: (1) craftsmanship, (2) teaching ability, and (3) a background of related education and general culture equal to that required of other teachers.

Instead of being an easy subject to prepare for, it has slowly become evident that industrial arts in its latest best forms is a most complex and difficult subject to teach effectively, and that the teacher's preparation is an unusually difficult and exacting one. A good craftsman cannot be made in a few weeks during a summer school, nor by working in industry for a similar length of time. Trade knowledge and skills are cumulative and are most easily acquired and absorbed slowly during the adolescent and early

adult period of life. In order to develop teaching ability and secure a better background of related education universities and some other colleges are now offering graduate courses that are attracting industrial-arts teachers. Unfortunately these courses with only a very few exceptions, offer nothing on the graduate level that will improve craft knowledge and skill. The graduate courses are unquestionably very valuable, but usually emphasize only the improvement of teaching ability and give a general background of related education. They are usually courses in education or industrial education rather than in industrial arts. Craft courses on the graduate level are needed and should be offered wherever proper subject-matter can be organized.

How an industrial-arts teacher can improve his teaching ability.

The industrial-arts teacher in service can improve his teaching ability from year to year if he continues his preparation. He should check over the following list and select the types of endeavor or adjustment best suited to his needs:

1. Attendance at college for more training and education.
2. Summers and odd time spent at practical craft work.
3. Private study of books and magazines.
4. Visits to other schools, shops, lumber-mills and camps.
5. Special investigations, research, experiments, and the making of new designs.
6. Attendance at meetings, lectures, and conferences.
7. Preparation of speeches and papers, and the writing of magazine articles, bulletins, and books.
8. Self-examination for wrong or faulty practices and obsolete methods of teaching.
9. The development of self control and poise which will enable him to take reasonable criticisms and suggestions from supervisors and inspectors, and of a judicial attitude which is needed in comparing his work with that of others.
10. The acquirement and use of a private technical library.
11. The attendance at worthwhile evening and extension classes or even correspondence-school courses in some lines.
12. The improvement of personality through better personal appearance, more refined habits and manners, high ethical ideals and winning leadership—largely acquired through association with cultured and refined people.
13. The acquirement of more executive ability and skill in class management.
14. The comparison and critical study of the best methods of teaching.
15. Preparation of many new lesson plans, instruction sheets, job sheets and the like.
16. Revision of old curricula and planning new courses with detailed outlines.
17. A careful study of tests, testing methods, the grading of problems, projects, and related materials.
18. Contact with educational movements in general in order to keep up with progress in education.
19. The inspiration that often comes through seeing other teachers in action teaching a real lesson.

20. The acquirement of an abundant and rich background of science, mathematics, and industry — all of which add interest to manipulative work.

21. Avoidance of the subtle and dangerous enticements of part-time money-making activities or non-school enterprises which take time and retard real professional advancement.

Professional status of present-day industrial-arts teachers.

The requirements for the successful teaching of industrial arts today are far different from the simple qualifications needed a few years ago, and altogether the new *professional status* of industrial-arts teaching is difficult in acquirement. It is almost impossible for an experienced craftsman to leave his vocation and start life over again as a college student after the normal college age has passed. Some persons have lived in a home environment of craft work and have acquired craft technic during odd hours and vacations. They have also been trained in a variety of types of manipulative work during their school life in the grades, the high school, and the college. This school craft training must be supplemented by teacher training and a college education in order to give industrial-arts teaching a professional standing.

The academic requirements for high-school teaching in industrial arts are now or will soon be equal or similar to those usual for other types of high-school teachers. Craftsmanship must partly be acquired outside of ordinary school and college hours, consequently the total preparation for professional status for high school teaching in industrial arts is often more than equal to that demanded of other teachers. The changes in the content and types of work required in industrial arts have created a demand for fully-trained teachers who have a professional training equal to that required for science, mathematics, or other types of high-school teaching and in addition craftsmanship and a rather broad trade knowledge. Proper college training will give industrial-arts teachers a professional status that the pioneer teachers of the formal manual training of the past never received. The early types were handicapped by the lack of special training which is usually given to professional teachers and persons going into other professions.

CONSUMER VALUES IN INDUSTRIAL ARTS

O. E. Sink

BALL STATE TEACHERS COLLEGE

Particular emphasis is placed here on an educative function of industrial arts which is too often overlooked, not only in the school shop but in the other divisions of general education.

"Industrial Arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes."—Bonser.

An efficient system of education endeavors to train the individual for an abundant and efficient life and to enable him to enjoy life to the fullest extent. Men and women live in a society which is extensively affected by the material objects by which it is surrounded. Society has the power of choice in the selection of the objects which form its environment. To be able to make a satisfactory choice of, and to efficiently use material objects is one of the chief objectives of industrial arts. The various fields of industrial activity may be divided into six classes for purposes of study; namely, clothing, foods, shelter, utensils, tools and machines, and printing. These industrial activities may be studied from two basic points of view, that of meeting consumer needs and that of developing productive skill. The former is the point of view of industrial arts.

The practice of intelligent choice and use of materials and products comes largely from a study of the intrinsic values and the relative costs in money of the products of industry. The individual of average means spends from fifty to ninety percent of his income for food, clothing, shelter, and other commodities included in the field of industrial arts. The different stores and shops of today offer literally thousands of products which are within the reach of and appeal to the whole population. Most of these products have genuine intrinsic value, but many are adulterated, defective, and inferior substitutes. There is always an article which is less expensive but with high intrinsic value to match the more expensive article with high intrinsic value. To a large extent, success in life and the higher, finer experiences which one may achieve depend upon the intelligence and the efficiency with which he chooses and uses industrial materials and products. Most failures come from unwise spending of one's income. Industrial arts is a study of great importance for developing efficiency in selection, use, and care of industrial products.

To be able to select that which is beautiful, and to properly appropriate to one's use those things which constitute necessities and luxuries requires training. To train for intelligent consumption is materially different from training for efficient production. One does not need to be able to design and construct furniture in order to properly furnish a home. It is necessary to be able to know quality

of workmanship, good design, and appropriate color combination in order to make a pleasing selection and arrangement of furniture. Each object to be included in a room must harmonize with the other objects and aid in producing a pleasing total effect. It is as important that home furnishings be so arranged that the effect is convenient and pleasing as that they be excellent in design and quality.

A bewildering variety of articles face the prospective purchaser and since the problem of selecting and purchasing articles such as clothing, furniture, pictures, automobiles, gifts, etc. is almost a daily one, the individual must rely on his own judgment. It is the responsibility of the school to provide the education and training in artistic selection and economic use of materials which are consumed by society. The development of appreciation for good design and workmanship, whether it be in a suit of clothes or a piece of furniture, may well begin early in the school life of the child through his participation in the actual construction of the simple projects found in the school room. Well-planned field trips to stores and shops will present an excellent lesson in the study of the problem of purchasing industrial products. Usually the local stores will cooperate thoroughly in such studies. Current magazines, furniture catalogs, and advertising matter, as well as books on the history of furniture and clothing may be used helpfully. There are some very valuable books on period furniture which may be used, especially in the upper grades. The purpose is to teach pupils to recognize that which is good, to create a love for it, and to select and arrange such materials as one may be able to afford in ways to give the greatest pleasure. The problem of selection, purchase, and use of articles from a home to the most insignificant thing is more than an individual one. It is a social problem. If one dresses like a fright, all who come in contact with him are affected in a distressing manner. Homes that are furnished in an atrocious manner cause a discomfort and a displeasure, not only to those who visit in the home but also to those who reside there.

The child enters the school at about six years of age. At the time he enters school, his consumer's education begins and never ceases from that time on, being acquired either by design or incidental learning. He immediately becomes a consumer in the making, and it is the responsibility as well as a privilege of the school to give that sort of training which will prepare him to be an efficient and intelligent consumer.

OCCUPATIONAL INFORMATION IN THE INDUSTRIAL ARTS

T. T. LINDSEY

PROFESSOR OF INDUSTRIAL EDUCATION
GEORGE PEABODY COLLEGE FOR TEACHERS

It is here suggested that industrial-arts courses provide occupational information in two distinct ways, and that much valuable information may appropriately be given as part of the course.

NO doubt some of the readers of this publication have heard, as has the writer, a statement by a prominent professor of education to the following effect: "Industrial Arts is of no more use in vocational guidance than the purpose a chicken serves when it walks through water and the resulting liquid is called chicken soup." Again we gather from another source that if we take care to develop ideals, attitudes and habits in our teaching of the practical arts, the giving of facts and experiences may be quite a secondary matter in promoting vocational choices. Once again we are reminded by another individual that there is nothing inherent in the teaching of industrial arts which promotes vocational guidance. That the formalized teaching of shop subjects may be as unproductive of the stated result as the traditional courses in Greek and Latin.

Now, where is the truth in this matter? What are we to believe and what shall we do about it? Lacking objective evidence one way or another, the real truth probably cannot now be given. Perhaps we should be honest about it and say we do not know, but what shall we do about it? Are we excused from making an effort in this matter because of lack of entire proof? There is probably much less likelihood of proving a case for the program involving emphasis upon attitudes and ideals, for no adequate tests have yet been devised to measure trait reactions. Again, what shall we do about presenting occupational information in industrial-arts courses for guidance purposes or even for general educational purposes?

It will be noted that the above statements in regard to industrial-arts values are only opinions. Opinions constitute the basis upon which we act when no objective data are available. This is reasonable. We are at liberty to assume an hypothesis on the basis of our own experience and the experience of others and thus proceed until some other better evidence causes a change in our plans.

In regard to the question concerning the use of occupational information in the industrial arts, it is herein proposed that a much safer procedure will be for us to take the opinions of all interested groups of specialists. Upon investigation it is found that there are three groups most concerned in this matter: One in the field of vocational guidance, another in industrial education and the third in the field of general education.

Specialists in the field of vocational

guidance unite in the opinion that the industrial arts render an important service to guidance in teaching related occupational information. Experts show their faith in this method of presenting information in city programs of guidance by the prevalence of its inclusion in present practice.

Workers in the field of industrial education are unanimous in the opinion that the teaching of related occupational information in connection with their work, valuable in any case to the subject itself, will further the program of vocational guidance.

Experts in the field of general education, with few exceptions, believe in the vocational guidance service to be derived from the teaching of occupational information in connection with the work of the practical arts. A survey of the statements of leaders showed that nearly all advocate "recognition of individual differences" and "exploration and guidance" as functions of the reorganized secondary school program.

It has been said that the knowledge of the group is superior to that of any individual in it. With this in mind, a proper working hypothesis is to assume that there are decided vocational guidance values to be derived from related occupational information taught in connection with the industrial arts.

For practical purposes, occupational information to be given in the industrial arts may be thought of as consisting of two parts. First, that which is acquired through experience with tools, materials and processes of the industry and a contact with whatever technical and related information is directly associated with it. To be most effective it is commonly agreed that this information should be acquired in the workshop on such projects and in such a manner that as true an experience as possible may be had of the work of the industry. On account of the nature of the practical arts by far the larger share of the time will be taken up with these activities. It is here that the strong teacher by precept and example will develop habits, attitudes and ideals in regard to work experiences.

Secondly, there will be that information which concerns workers and their relationship to the requirements of the job, to other workers and to society at large. The body of information will be made up of those items without which a real understanding of the worker at work cannot be obtained. Such information constitutes the part most often neglected in industrial-arts courses due to the proneness of teachers to devote themselves to the teaching of techniques to the exclusion of the gaining of an adequate understanding of the status of workers in their relationship to occupational and community life. And yet it is this body of information that is frequently of most use to the pupil in making his decisions. Here also there are excellent possibilities to develop character traits through searching for answers to questions concerning life conditions and in making judgments based upon these findings.

Among items for investigation may be listed the following:

1. The local and national importance of the occupation with the demand for workers.
2. The amount and kind of education required.
3. The steps, with age levels, in the

progress of one who enters the occupation from the time he begins until he reaches the top in his chosen field.
4. The money return for each of the foregoing steps.
5. The physical demands of the occupation.
6. Is it a fundamental industry and likely to increase in demand with the development of the country?
7. The working conditions.
8. The financial and social status of workers.

More detailed lists of items than the above are readily available in the form of attractive booklets.

Various devices may be used to lend interest to the teaching process and make it possible for students to secure answers to the questions set up. Among those frequently used are the following:

1. Visits to places or establishments to see work going on.
2. Consultations with experts who are willing to help.
3. The pursuit of a hobby.
4. Use of printed material such as:
   a. Pamphlets and books on occupations.
   b. Biographies.
   c. Fiction.
5. Reports and class discussions.
6. Occupational movies and other pictures.
7. Talks by selected individuals.

Through these means it is suggested here that the skilful and diligent teacher may render a real service in industrial-arts education as well as in the field of guidance.

PUPIL STUDY AS A PHASE OF INDUSTRIAL ARTS

ELROY BOLLINGER
HEAD OF DEPARTMENT OF INDUSTRIAL ARTS
UNIVERSITY OF NORTH DAKOTA, GRAND FORKS, NORTH DAKOTA

The pupil-study phase of industrial arts is often neglected, and this presentation of its importance will be of interest to teachers of other subjects as well as to industrial-arts teachers.

REFLECTION on educational progress brings the early realization that more is known today about the growing boy and girl than at any other time during the history of the race. This knowledge comes largely through the contribution of psychology and physiology. In its application such information is of inestimable value to the educator in determining educational programs, deriving methods of instruction and organizing content material. To the industrial-arts teacher this knowledge about the boy or girl means a more intelligent selection of the shop units to be offered; it assists in making possible a scholarly evaluation of such methods as the instruction sheets, the demonstration, the reports, the production system, and the "free lance" plan; it demands that physical characteristics be respected and considered in the purchase and placement of equipment, whether it be a bench, a jointer or a pair of tin snips. Any industrial-arts program developed without adequate knowledge of the chief factor concerned, namely, *the child,* pins its hope for success on mere chance.

Several groups have united to supply the necessary information about children, namely, the psychologists, the physiologists, the sociologists and scientific educators. *Pupil study* from these approaches seems basic to all educational growth, but especially so to fields involving manipulative features. Such a study may serve two purposes. First, a knowledge of the psychological, physiological and sociological characteristics of a youngster is basic in the formulation of educational programs, methods and content. For example, it would seem helpful to an industrial-arts teacher to know that the period of 8 to 12 years is the age to develop the accessory muscles, that th period from 12 to 16 is the awkward period for most children, indicating that fine exacting work, using the accessory muscles, may be permanently harmful. Accordingly programs, methods and content must be materially affected by these truths. Hence pupil study becomes a means of promoting teaching efficiency. Second, the educational experiences of a pupil may in themselves reveal valuable information to both pupil and teacher. This may be illustrated by the opportunity in shop work for the display of some mechanical interest or aptitude which may aid in bringing about an intelligent vocational choice. In short, the course of study may in itself become an effective means of studying the pupil more objectively.

Industrial arts enjoys a peculiar and enviable position by the contribution it can make to the cumulative knowledge of its pupils. Industrial arts deals more specifically with the physical and manipulative than any other subject in the curriculum. Accordingly it demands that teachers of the subject possess first, basic information about both boys and girls of a psychological and physiological nature, and second, a realization of possibilities of the subject in contributing to the general knowledge about individual pupils.

The increasing professional preparation of industrial-arts teachers, four years or more being required in most cases, insures a basic understanding of the child conducive to efficient teaching. Through work in physiology, physical education, hygiene, and special educational courses the modern shop teacher becomes informed of the physical measurements of pupils, he becomes conscious of height, weight, and muscular development, their relationship, for example, to the selection of equipment. He is also in a better position intelligently to consider age-levels for instructional purposes, and to cope with pupil errors, to recognize physical handicaps as they make themselves apparent in shop situations and to adopt remedial procedures.

Courses in general and educational psychology provide information about habit formation, interest, the learning process and characteristics pecular to the adolescent boy and girl. How much more effective a teacher's efforts become when he understands the duration of interest possessed by his pupils. What else can answer the question of the length of demonstrations, talks, reports and the time to be consumed by a single project? Griffith in his pioneering effort to apply the teachings of psychology to industrial arts pointed out the futility of pure

exercise as a means of producing pupil growth and skill. The applications made by Griffith, that are in acceptance today, should be known by all industrial-arts teachers. The exceptional preparation and application of psychological principles of the few, a score of years ago, should now be the basic and common information of all. It is encouraging to the Industrial-Arts profession to know that its members now in preparation for teaching are taught to use psychology as a basis of pupil study.

General and specialized educational courses prepare the modern industrial-arts teacher in administration factors involved in pupil study. Pupil progress, as necessitated by grading and promotion, are part of his preparation. A knowledge of guidance, its function, its administration and the industrial-arts teacher's relationship to the entire guidance program, all are elements in the professional growth of the prospective teacher. Special educational courses such as "Tests and Measurements" provide the latest techniques in one of the important phases of pupil study. Scientific testing is a mere infant in the industrial-arts field yet how essential it is for an intelligent understanding of pupils. Testing measures pupil progress, it locates pupil errors, it brings to light pupil difficulties, it determines pupil achievement, all of which are paramount in *knowing the pupil*. Such is the background of the Industrial-Arts teacher in preparation today. *Pupil study* is a vital phase of all education, but it is peculiarly essential in industrial-arts education.

Attention has been called to the value of the Industrial Arts as a means of studying the pupil more completely. Such a study seemingly serves its greatest usefulness as an aid in occupational or vocational selection. This is exemplified by the exploratory experience possible in Dr. Warner's LABORATORY OF INDUSTRIES plan. Such experiences may lead to discovery of special aptitudes, or their absence, the arousal of new and dormant interests, the discovery of physical handicaps and individual peculiarities complimentary or opposed to certain occupational selections. It is not hard to understand why a pupil should express a lack of interest in something he has never experienced, be unaware of a clumsiness that makes drafting, as a vocation, undesirable, discover he possesses a peculiar aptitude in design. Pupil study functions when it points out the desirability of diversified activities in shop experiences for young boys and girls.

Is it not likely that shop work may even bring to light certain abnormalities in hearing, seeing, muscular coordination and other physical handicaps not otherwise observed, to the end that proper remedial measures may be taken? The writer recalls an experience in his own printing class where a student discovered for the first time that he was color blind, especially to red. This discovery came about when the writer observed the student entirely failed to produce a shade of red while mixing ink for a job he was to run. He knew that the color was red, further than that he possessed no powers of discrimination. This information becomes important when occupational selection is attempted. Color blindness forever eliminates almost entirely the possibility of em-

ployment in such vocations as railroad work, artist, color printing and all work where color discrimination is essential. Industrial arts does provide an opportunity to know the pupil better.

Summarizing, a study of the pupil is a basic determinant of program, method and content. Educational experiences give opportunity for study of the individual to bring about more effective teaching and guidance. The Industrial-Arts teacher prepared in the colleges and universities of today may contact essential elements of pupil study through courses in physiology, psychology and sociology. Further, industrial arts serves for the extension of knowledge about the individual pupil in a way not possible through other subjects because of its laboratory and social setting. Thus it may be safe to predict an increasing contribution of industrial arts to general education which will be even more vital, fundamental and integral than has been thought possible in the past. Educational progress, in the main, would seem to be proportional to the extent to which the pupil is studied and understood.

THE VALUE OF INDUSTRIAL ARTS IN EVERYDAY LIFE

VICTOR RANDEL

PROFESSOR OF INDUSTRIAL ARTS
SAM HOUSTON STATE TEACHERS COLLEGE, HUNTSVILLE, TEXAS

The writer has pointed out the more easily observed outcomes of industrial-arts in the homely activities of daily life.

AS a study for educative purposes industrial arts has been defined as "A study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes."*

It is generally conceded that there are two main purposes for the study of the industrial arts, namely: the vocational purpose and the general educational purpose. The first had to do with specialization in some phase of industry which is to become the vocation of the individual. The emphasis here is upon skill. Perhaps the greatest problem of most individuals is that of earning a livelihood. When industrial arts is studied from this viewpoint there can be no question as to its value in everyday life, because it becomes the individual's occupation.

However, there are other problems and complexities of life which should be met with a greater degree of efficiency, understanding and satisfaction than is common among the great majority of people. Therefore, the second purpose is the one which most concerns us in this study. It is the purpose here to show what constitutes a study of the industrial arts and then to see how it will be of permanent value to the individual in everyday life, regardless of his occupation. It is from the viewpoint of the desires,

* Industrial Arts for Elementary Schools. Bonser and Mossman. Page 5.

problems, obligations and opportunities of the consumer of the products of industry.

Such a study to be worthy of a place in the curriculum should include both manipulative and non-manipulative activities. The manipulative will include mechanical drawing, architectural drawing and design drawing, selecting and preparing materials, construction work and various types of finishing. These activities will include "changes in the forms of materials to increase their values." We cannot think of changing the forms of materials without at once thinking of some sort of plan or design to which we want the materials to conform.

Neither can we think of the design or plan of an object without thinking first of the intended use of the object. The intended use of an object largely determines its design and construction. Notice, for example, the different designs and methods of construction of railroad cars. The passenger car is of one design, the cattle car is of another. A similar comparison might be noted in the design and construction of automobiles according to the intended use of each type. The same idea applies to the design and construction of buildings and to practically every other industry.

After the design and structural details of an object have been determined, the matter of selecting the best suited materials for construction is of next importance. Here again the use of the finished object largely determines the kind of material to be used. In the case of furniture the material might be wood. The kind of finish to be used might influence the choice of wood. If a paint or enamel finish were desired the kind and quality of wood need not be selected with such exacting care. If a natural or transparent finish is desired, great care should be exercised in selecting the kind and quality of wood in order to be able to produce the desired finish.

In whatever field of industrial arts a study is made it is desirable to make an analysis of the field in terms of what a boy should be able to do in that field, and what he should know. Such an analysis consists of two lists: one list contains all of the units of operation necessary to enable the individual to perform well in that field; the other list contains the important learning units of information in that field. The first list is composed of manipulative activities; the second list consists of non-manipulative activities.

Shop or laboratory work should provide experience in a large number of industrial activities. By so doing, the student will get a repetition of experiences in planning projects in each field, selecting the most suitable materials, doing the actual construction work and providing the appropriate finish. In the non-manipulative activities he will acquire valuable information closely related to the work being done. It may consist of information about lumber, which would enable the student to identify the common woods such as oak, pine, walnut, hickory, gum, cypress, spruce, cedar, mahogany, chestnut, birch, poplar and maple. It should include information about the main characteristics of various woods, their principal uses, the sources of each, the methods of cutting, drying and milling

lumber. Other information closely related to wood and woodwork might be that concerning glue, nails, screws, finishes, sand-paper and styles of furniture.

In machine shop work related information might consist of a study of metals which would enable the student to know the principal characteristics of cast iron, wrought iron, soft iron, carbon steel, high speed steel, brass, bronze and babbitt, and be able to recognize each. It should include information about the uses of various metals, about heat treatment of metals and about the cutting action of machine tools.

In sheet metal work the related information might pertain to the manufacture of tin plate, sheet zinc, sheet copper and rivets. In every field of industrial arts the non-manipulative study of ready-made articles would occupy an important place. Such a study should be undertaken at the time of planning projects for construction in the shop.

An analysis of the elements of design, the methods of construction, the kind and quality of materials used, and of the quality of workmanship of a large variety of the products of industry furnish standards by which work to be done in the shop may be judged.

Such a study and such experience in the field of industrial arts as described above will be of value to the individual in everyday life, regardless of what his occupation may be. Let us see what are some of these values. For every person who lives in a home there are many problems to be met which are of an industrial nature. The matter of planning a home, or selecting a home that is already built, involves many of the principles of design and construction learned in the study of industrial arts. In selecting the furnishings and equipment for a home a knowledge of the principles of design and construction may be made use of continually. Every home, over a period of years, requires a certain amount of upkeep. The man who has studied industrial arts in the school will be able to do the many little repair jobs that need to be done from time to time, thus keeping his home in good repair at the minimum cost.

Every man has some leisure time. A study of industrial arts prepares the individual for a lifelong hobby in case his interests are along a mechanical line.

The matter of selecting, using and caring for the products of industry can be done with a greater degree of efficiency, understanding and satisfaction by one who has studied industrial arts than by one who has not had this experience.

In this day of rapid changes in industry and the necessity of workers having to change from one kind of work to another, the skills acquired in industrial arts enable the worker to adapt himself to these changes with the minimum loss of time and effort.

To be able to observe the products of industry with a knowledge and understanding of all that is required in their production is of value. Difficult as it is to place an exact valuation upon any line of study that is not used primarily as one's vocation, it is evident from the foregoing discussion that a knowledge of the industrial arts ranks high among those studies which have significant values in everyday life.

YOUR SCHOOLS AND MINE

Roy C. Woods, Ph. D.
PROFESSOR OF EDUCATION, MARSHALL COLLEGE
HUNTINGTON, WEST VIRGINIA

[*In this department Dr. Woods will answer to the best of his ability any or all questions on educational topics that are addressed either to him at the address above, or to* EDUCATION. *It is to be understood that the writer alone is responsible for the answers given.*—H. B.]

Do the terms "central tendency" and "median" mean the same thing?

No. The central tendency means that tendency which collections of data show of bunching near the center of the curve or bulking high at some score which is about half way between the extremes. The median is one of the score which may be computed by using the proper formula. There are other measures of central tendency, such as mid-measure and mean.

How long should a test period be?

I feel that best results may be obtained if the period is not longer than the recitation period. It may be defensible and usually is practiced of making the final examination two periods in length. The answer is still largely a matter of opinion although psychology in general indicates that shorter periods as a whole are more satisfactory. Most standard tests are timed for "sittings" of about 30–50 minutes.

I have a child that ranks well in all subjects but arithmetic, but whose work in that subject is below the standard. What should I do? Should I fail him?

Do not fail him, but give him remedial drill in arithmetic. It does not seem at all fair to fail him in a grade for one subject. If you are in a departmentalized school, hold him over in arithmetic. If you happen to be in traditionally organized school, have him return to you for his work in overcoming his deficiency.

I have a child who seems capable of mastering about one-half to two-thirds of the work only. No matter how hard he tries he always comes up lacking about the same amount. He really does try. What should I do with him?

There seems but two things you can do in the public school with such a case. You may fail him, or you may teach him as carefully as possible that which he can master, being patient with him and allowing him ample time. When he has gotten all that he can reasonably be expected to get from that grade, "pass" him, since he will be able to do more in the grade above than he will do by repeating amid the annoyance of failing and falling behind his classmates. One must be careful to avoid teaching pupils habits of failure. The case you mention must be measured in terms of progress his type or group can make and not in terms of traditional standards built for the mythical average pupil. I'd pass him. See Heck. Administration of Pupil Personnel. Ch. XVII.

What advantages are claimed for the objective tests over the older form or essay test?

They are more valid in that they measure what they intend to measure; i. e., subject matter only. They are more reliable in that they measure more accurately and consistently. Being objective they eliminate the personal judgment of the scorer. They are designed so as to require less writing, enabling a larger sampling of subject matter tested. They are easily administered and scored. Usually they are more interesting and better liked by both the teachers and the pupils.

The essay tests have none of these advantages, but will probably always be used in some subjects if not all. They test the pupil's ability to organize the material. Some claim they even test a pupil's ability at composition and will, if such is stressed along with the content, but too frequently content has been so stressed as to crowd from the pupil's mind any thought of composition.

Subjects bordering on the recreational and appreciational do not lend themselves well to objective tests, e.g. literature, poetry, music, art, physical education. These latter may be tested objectively for the factual side only. Essay tests seem best suited for their needs. See Ruch and Rice. Specimen Objective Examinations. Also Ruch. Objective or New-Type Examination. (There are several good treatises on this subject referred to in these texts.)

Where can I find a good self-rating scale whereby I can check myself against some criteria of generally recognized standing?

See Barr and Burton. Supervision of Instruction, p. 481, or Burton, Supervision and the Improvement of Teaching, p. 362.

To whom is the Janitor responsible for the dispatch of his work?

The principal. It is the principal who is the executive officer in a building and not the teacher. Many times, however, the failure to do a task is not intentional so much as it is oversight and if tactfully done the teacher can secure the aid of the janitor and have the work done without bothering the busy principal or incurring the ill-will of the janitor, which in each case will be done if the matter is taken to the principal. See Cubberley. Principal and His School, Ch. XI. Also Andersen. A Manual for School Officers, Ch. XXIII. (Andersen here speaks of the superintendent having direct charge, but is thinking of a small system. In larger systems, the superintendent will delegate this task to the principal, making him in direct charge within his building of all school matters subject to the general policies laid down by the central office.)

How should monitors be chosen?

I feel that if the scheme of monitors is used, it should be in the form of an honor, and the pupils who are very good in class work can be assigned to assist the slower ones, thus saving much time for the teacher. However, do not stop there, since there are many other little duties about a schoolroom that the slower pupils can do, and award them these duties when they show evidences of good attitude, strong effort, good attendance, etc. By this way, you can arrange your monitors so as to motivate the slower as well as the better pupils.

DEPARTMENT OF BOOK REVIEWS

The Improvement of the Assignment. By *Gerald Alan Yoakam.* New York, 1932. The Macmillan Company. xii + 398.

The reviewer has no hesitancy in designating this book as one of the outstanding contributions in education for 1932. It represents a type of thoroughness in the preparation of books on education which should become more common. It is scholarly, it is based upon available references, and the author has succeeded in carrying into its pages an experimental and research attitude which should prove most stimulating to readers. It is carefully referenced by footnotes, and each chapter is followed by a fairly extensive list of supplementary readings.

The author, in well-proportioned chapters, takes up such topics as the following: the importance of the assignment, the need for its improvement, the characteristics of a good assignment, the effects of the changed curriculum and changed philosophy of education upon the assignment. The new type assignment, in contract or other form, is recognized as a contribution which has its limitations and needs to be used with discrimination and judgment. The author has used many illustrations of actual assignments and has endeavored throughout to make his work as objective as possible.

There are, nevertheless, many illustrations of subjective analysis, but based upon mature judgment. The ten characteristics of a good assignment (page 89) illustrate this point. Such items as "definiteness," "inspiration," and "direction" are not self-explanatory in themselves. The reviewer is of the opinion that a much more objective type of score card for the assignment could have been prepared and that students could have been taught to use such a score card to advantage.

Notwithstanding the many merits, there are other limitations which may be briefly mentioned. For one thing the author, while recognizing different types of material such as drill and problem, does not show the necessary variation of the assignment in dealing with the various types. The author's treatment of tests is very brief and inadequate (see page 134).

The checking schemes for the variation of the assignment which appear in the last chapter are a little extensive for daily use but are valuable for a student in training who is observing.

Dr. Yoakam's product deserves a parting favorable word not only because of its general spirit but because of the masterly handling of details and the fact that he has set up a model which ambitious writers may well imitate. It is an illustration of the type of writing that is very much needed in education,—thorough, exhaustive, objective, and imbued with a spirit of research.—GUY M. WILSON, Boston University.

One Thousand Problems in Industrial Education. By *Homer J. Smith.* The University of Minnesota Press, Minneapolis, Minn., 1931, 90 pp.

The "rapid extension of graduate work" and the "heightening scholarship among industrial teachers" has created a demand for and made possible this publication devoted entirely to a listing of one thousand professional problems needing attention in Industrial Arts and Industrial-Vocational Education. The book is an unclassified recording of topics that have come to light in the author's classes and seminars, prefaced by an introduction that calls attention to the possible use of the list, with an illustration of its adaptation for class purposes. The book should prove helpful to all interested in education, but peculiarly so to graduate students and those in charge of teacher preparation in the fields of Industrial Arts and Industrial-Vocational Education.—ELROY BOLLINGER, State University of North Dakota.

Manipulative Participation in the Study of Elementary Industrial Arts. By *Theresa Charlotte Gunther.* New York City, Bureau of Publications, Teachers College, Columbia University, 1931. Pp. iii —57.

This investigation was undertaken for the purpose of determining "the effect of the presence of manipulative participation on the learning and retention of facts in the field of elementary industrial arts."

The experiment was carried on in the third, fourth, fifth and sixth grades in five representative schools. An initial test was given in units dealing with wool, wheat, clay, soap, iron, and paper in order to determine the status of the pupils in the way of information involved. A period of four hours per week for four weeks was spent in a study of each unit and a final test was given. A delayed recall test was also given two months after the final test.

The findings indicate "greater learning and retention of facts as measured by the tests" . . . in "the use of the manipulative participation technique than by the use of the conventional method of studying facts from books." Irrespective of grade or unit, the gains were "uniformly higher and losses were uniformly lower" with the group using the manipulative method.

The reader is impressed by the care used in conducting this experiment and the apparent thoroughness in the statistical techniques involved. The results of the study should give every encouragement to those who advocate a greater emphasis on the manipulative method in elementary education.—T. T. LINDSEY, George Peabody College for Teachers.

General Mechanical Drawing for Beginners. By *Woellner and Wittick,* Chicago. Ginn & Company. 1932. 116 pages.

This is a book which differs greatly from most texts for beginners, in that the subject matter has been built around the life activities of the average individual, especially the high school student. The book is divided into fourteen major units in the following order: Lettering, Sketching, Working Drawing, Inking, Pictorial Drawing, Applied Geometry, Graphs and Charts, Developments, Machine Drawing, Duplicating, Map Drawing, Furniture Drawing, Architectural Drawing, and Symbols. Supplementary chapters are added on "A Visit to an Industrial Drafting Room," and "Books on Mechanical Drawing."

Such problems as a Modernistic Book-End, Modernistic Table Lamp Base, Table Model Radio Box, Airplane Wing Strut Fitting, Discus, and Automobile Steering Post Support, are used to illustrate the chapter on working drawings.

The book is carefully written and illustrated. It contains well-planned lesson assignments and references, and is so written that the units of work which it contains may be taken up in any sequence. —LAWRENCE F. ASHLEY, Eastern Illinois State Teachers College at Charleston.

The Administration of American Education, by *Frank Pierpont Graves.* New York, 1932. Macmillan Co., 631 pages.

This is essentially a review of American Education in four phases or parts. Part one deals with the pupils and the class room, emphasizing the improvement that has taken place in class-room methods, courses of study, text books, class organization, and pupil adjustment. Part two shows the progress that has been made in such matters, as preparation, certification, and placement of teachers, tenure, salaries, retirement, as well as supervision, voluntary associations, and professional ethics. Part three deals specifically with administration and supervision and shows the work of the principal, the supervisor, the business manager, and the superintendent of schools, their relations to each other and to the Board of Education. The importance of the unified system under the superintendent is emphasized regardless of the size of the city, as this insures the dominance of educational aims. Part four deals with district, urban and rural systems, state organization, and the part of the nation in the educational scheme. The conclusion shows the need for an adequate philosophy of education properly related to a free democratic society.

The work throughout impresses the reader with unusual scholarship, breadth

of view and comprehension of the significance of the many details connected with the administration of American Education. Each chapter is followed by an extended selected bibliography in which each reference is carefully evaluated. These carefully prepared bibliographies further indicate the breadth and maturity of the scholarship which has gone into the production of this volume.

The book should prove helpful to students of education, or teachers and administrators who desire comprehensive and fundamental views on our American system of education. It would be of immense value to education in America if the book should be widely read by laymen, particularly editors, publicists, and all engaged in any way in attempting to change the social order.—GUY M. WILSON.

NEW EDUCATIONAL BOOKS

We acknowledge receipt of the following publications of interest to the readers of EDUCATION. Mention here does not preclude review in this or subsequent numbers of EDUCATION.

Habits for Safety. By *Harry W. Gentles*, Chairman of First Aid Life Saving, Chicago Chapter, American Red Cross, and *George H. Betts*, Director of Educational Research, Northwestern University. 1932. Illustrated, 228 pp., cloth. The Bobbs-Merrill Company.

An Introduction to Education and the Teaching Process. By *Jesse E. Adams*, Professor of Education, University of Kentucky, and *William S. Taylor*, Dean of the College of Education, University of Kentucky. 1932. 668 pp., cloth $2.50. The Macmillan Company.

Modern English, Books One, Two and Three. By *Henry P. Emerson*, late Superintendent of Education, Buffalo, N. Y., and *Ida C. Bender*, late Supervisor of Primary Grades, Buffalo, N. Y. Revised by Blanche Jennings Thompson, City Normal School, Rochester, N. Y., and illustrated by Tyyne Hakola. Book One, 249 pp., 60c; Book Two, 342 pp., 64c; Book Three, 406 pp., 68c. The Macmillan Company.

The Democratic Philosophy of Education. By *Herman Harrell Horne*, Ph.D., LL.D., Professor of the History of Education and of the History of Philosophy at New York University. 1932. 547 pp., cloth, $2.50. The Macmillan Co.

Social Aims in a Changing World. By *Walter Greenwood Beach*. 1932. 165 pp., cloth, $1.75. Stanford University Press.

The Modern School Achievement Test. By *Arthur I. Gates, Paul R. Mort, Percival M. Symonds, Ralph B. Spence, Gerald S. Craig, DeForest Stull, Roy Hatch, Amy I. Shaw*, and *Laura B. Kreiger*. Tests on Arithmetic, Spelling, Health Knowledge, Language Usage, History and Civics, Geography, and Elementary Science. 1931. Bureau of Publications, Teachers College, Columbia University.

Taming the Wild Grasses. By *Elizabeth Forbes O'Hara*, Ella Flagg Young Elementary School, Chicago. Illustrated by *Kate Seredy*. The Macmillan Co. 1932. 67 pp., cloth, 60c.

The Educational Crisis in Sweden in Sweden in the Light of American Experience. By *Christina Stael von Holstein Bogoslovsky*. 1932. Columbia University Press. 301 pp., cloth, $3.50.

Man's Great Adventure. An Introduction to World History. By *Edwin W. Pahlow*, Professor of the Teaching of History, Ohio State University. 1932. Ginn & Co. 854 & xxiv pp., illustrated, cloth, $2.12.

One Foot on the Ground. By *Ernest Cobb*. 1932, cloth, 248 pp. G. P. Putnam's Sons. $2.00.

The Story of Common Things. By *Louis Ehrenfeld*. Illustrated by *Joe Richards*. 1932, 203 pp., cloth. Minton, Balch & Company.

The Initiation of Social Contacts by Preschool Children. A Study of Technique in Recording School Behavior. By *Alma Perry Beaver*, Ph.D. 1932. Bureau of Publications, Teachers College, Columbia University.

A Charter for the Social Science. Report of the Commission on the Social Studies. Part I. Drafted by *Charles A. Beard*. 1932. Charles Scribner's Sons. 122 pp., cloth, $1.25.

World History. By *Carlton J. H. Hayes*, Professor of History in Columbia University, *Parker Thomas Moon*, Professor of International Relations in Columbia University, and *John W. Wayland*, Professor of History and Social Science, State Teachers College, Harrisonburg, Virginia. 1932. The Macmillan Company. Illustrated, 932 pp., cloth, $2.20.

An Outline of the History of Europe. (1815-1932). By *Henry W. Littlefield.* 185 plus xvi pp. Barnes & Noble, Inc. 75 cents, paper covers.

The Jesuits and Education. The Society's Teaching Principles and Practice, Especially in Secondary Education in the United States. By *William J. McGucken,* S. J., Ph. D., Professor of Education, St. Louis University. 1932. The Bruce Publishing Co. 352 pp., cloth, $4.00.

Education in Hungary. By *Julius Kornis,* Ph.D., Member of Parliament, formerly Under-Secretary of State in the Hungarian Ministry of Public Instruction, Professor of Philosophy in the University of Budapest. Bureau of Publications, Teachers College, Columbia University. 1932, cloth, 289 pp.

New Approach to German. For Junior and Senior High Schools. By *Eugene Jackson,* Chairman of the German and Spanish Department, Samuel J. Tilden High School, New York City. 1932. Longmans, Green & Company. 399 pp., cloth, $1.44.

Dominant Ideas in the Works of Guy de Maupassant. By *Roy Alan Cox,* Instructor in Romance Languages, University of Colorado. Published by The University of Colorado. 157 pp., paper, $1.00.

Elementary English Work Books, Books I and II. By *P. H. Deffendall,* Principal Blair School, St. Louis, Mo. 1932. The Macmillan Company. 60 and 62 pp., 28 cents each.

Problems of Freshman College Girls. A study of mother-daughter relationships and social adjustments of girls entering college. By *Eugenie Andruss Leonard,* Ph.D. 1932. Bureau of Publications, Teachers College, Columbia University. 139 pp., cloth.

Fine Arts for Public School Administrators. By *Sallie B. Tennahill,* Associate Professor of Fine Arts, Teachers College, Columbia University. 145 pp., cloth.

Reading with a Purpose Series, No. 55, American Life in Architecture. By *Philip N. Youtz,* A. I. A., and No. 66, Unemployment, by *Aaron Director.* 1932. Paper, 35c; cloth, 50c. American Library Association.

Twenty-Five Years. A Memorial Volume in Commemoration of the Twenty-fifth Anniversary of the Vineland Laboratory. Edited by *Edgar A. Doll,* Ph.D., Director of Research. The Training School at Vineland, New Jersey. 1932.

Open Spaces, A Fifth Reader Real Life Stories Series. By *W. W. Theisen,* Assistant Superintendent of Schools, Milwaukee, Wisconsin, and *Sterling A. Leonard,* late Associate Professor of English, University of Wisconsin. Illustrated by *E. A. Furman.* 1932. The Macmillan Co. 378 pp., cloth, 84c.

The Skycraft Book. By *Laura B. Harney,* Teacher of Science, Washington Junior High School, Mount Vernon, N. Y., and Licensed Airplane Pilot. 338 pp., cloth, illustrated, $1.08. D. C. Heath and Company.

From Hunters to Herdsmen. By *Elizabeth Forbes O'Hara,* Ella Flagg Young Elementary School, Chicago. 1932. The Macmillan Co. 67 pp., illustrated, cloth, 60 cents.

Jobs for the College Graduate in Science. By *Edward J. v. K. Menge,* Ph.D., Sc.D., Director of the Department of Zoology, Marquette University. 1932. The Bruce Publishing Company. 175 pp., cloth, $2.00.

Planning Residence Halls for Undergraduate Students in American Colleges and Universities. A Handbook for the use of college officers and members of building committees. By *Harriet Hayes,* Associate in Personnel Guidance, Teachers College, Columbia University. 1932. Bureau of Publications, Teachers College, Columbia University. 247 pp., cloth.

52nd YEAR

BURDETT COLLEGE

College-Grade Business Courses in two years: Business Administration-Accounting-Executive Secretarial. Also shorter business courses. Training leads to executive-grade positions. Placement service at graduation and later if needed. New building. Send for illustrated catalogue to

F. H. BURDETT, President

156 Stuart Street, Boston, Mass. Hancock 6300

Boston University School of Education

offers

1. Senior College and Graduate work in teacher training for the bachelor's, master's and doctor's degrees.
2. New degree courses in Physical Education for men and now (through the amalgamation of the Sargent School for Physical Education) for women.
3. Four-year certificate and five-year degree courses in Art.

All the resources of a large University are available for every student.

Comfortable dormitories for women under University direction.

The historical and cultural associations of Boston are a constant asset.

Address, Dean Arthur H. Wilde,
29 Exeter Street, Boston

Earn Money While Attending Summer School

IF you will spend a little time while attending summer school to show your friends "EDUCATION" and take their subscriptions, we will supply all necessary material and give you a very liberal commission. Write for details at once. Only one representative in a school. EDUCATION is endorsed by leading educators.

THE PALMER COMPANY

120 Boylston Street Boston, Mass.

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., OF "EDUCATION," Published at Boston, Mass., required by the Act of August 24, 1912.

Editor, Herbert Blair, 120 Boylston St., Boston, Mass.

Managing Editor, Herbert Blair, 120 Boylston St., Boston, Mass.

Business Manager, Raymond P. Palmer, 120 Boylston St., Boston, Mass.

Publishers, The Palmer Company, 120 Boylston St., Boston, Mass.

Owners of more than one per cent of the stock of The Palmer Company (incorporated under the laws of Massachusetts), Publishers of Education—Frank Herbert Palmer, 120 Boylston St., Boston, Mass.; George F. Newcomb, Salem, Mass.; John D. H. Gauss, Salem, Mass.; Edith Leonard, Rochester, Mass.; Howard R. Guild, 178 Devonshire St., Boston, Mass.; Mrs. Alfa L. Small, Providence, R. I.; Walter B. Small, Providence, R. I.; H. N. Knox, Melrose, Mass.; Mrs. Rosa L. Sawin, Wakefield, Mass.; Mrs. Bertha L. Ames, Yonkers, N. Y.; Ella F. Ormsbee, Brookline, Mass.; Martinetta Wright, Newton, Mass.; William D. Maynard, Hanover, N. H.; Mrs. Lura S. Reed, Chatham, Mass.; Mrs. Bessie F. Vinton, Dover, N. H.; John W. Gauss, Salem, Mass.; B. Norman and Helen C. Strong, Hartford, Conn.; Raymond P. Palmer, East Braintree, Mass.; Beth H. Heald, Upper Darby, Pa. Bondholders, mortgagees, and other security holders holding 1 per cent or more of total amount of bonds, mortgages, or other securities—None.

Sworn to before F. T. Monroe, Notary, Apr. 6, 1932, and signed by

RAYMOND P. PALMER, Manager.

PRINTING

is our specialty, and for over one hundred years this office has turned out from its presses anything from a business card to a directory including many fine Genealogical and Historical Collections of the Essex Institute of Salem, Mass. ¶ We have a modern and up-to-date equipment, experienced and efficient workmen for the better grades of printing. ¶ Let us know what you need in the line of printing and we will estimate and show samples of our work. ¶ Our prices are reasonable and our service is prompt.

NEWCOMB & GAUSS CO.
PRINTERS
No. 1 City Hall Avenue *Salem, Mass.*

Diplomas
promptly and expertly engrossed in any quantity
The KOLLER STUDIO
1201 CHESTNUT STREET PHILADELPHIA

BEAUTIFUL STATIONERY

20 lb. Hammermill Bond.	Printed to order.			Postpaid.
Price per	100	250	500	1M
Bond Letterheads, any size	$1.00	$1.75	$2.50	$4.00
Bond Envelopes, 3⅝ x 6½	1.00	1.75	2.50	4.00
Letterheads and Envelopes	1.50	2.50	4.00	7.00

Personal Stationery, Cards, Tickets, Invitations
Satisfaction Guaranteed, Send for Samples.
The J. R. S. Co., Dept. P, 800 Stewart Ave, COLUMBUS, OHIO

Any Translation — Any Dictionary

If you want a Translation of any of the Ancient and Modern Classics or a Dictionary in any language, write The Translation Publishing Co. Inc. 76 Fifth Ave. New York

Class, Fraternity and Athletic
PINS, RINGS and MEDALS
CHAS. A. WINSHIP AND CO.
713 B. Capitol Bldg., 159 N. State St.
CHICAGO, ILL.

STEELE'S
Sixteen Varieties of Duck Shades
Superior Steel Rollers
Life-span Steel Shade Slats
All Steel Venetian Blinds
Steel Window Ventilators
Stage Curtains

OLIVER C. STEELE MFG. CO. DUCK SHADES METAL ROLLERS SPICELAND, IND.

Oldest and Most Progressive Manufacturer of Duck Window Shades in America

One of the 16 varieties
If no Local Dealer Write us

PRINTING & BOOKBINDING
WE possess unexcelled facilities for editing and printing your school or college papers. Send us your MSS. for examination and get our rates. Our Bindery is thoroughly able to handle repair work. Public and School Libraries are our specialties. Our School supplies are second to none.
ANGEL GUARDIAN PRESS
111 Day St., Jamaica Plain, Boston, Mass.

PLAY'S THE THING
A Manual of Games and Devices
By Mary Davis *and* Annie E. Harris
This book is a collection of about seventy-five fascinating and instructive games and devices that may be used in the elementary grades in connection with geography, spelling, grammar, and other subjects. A helpful manual for every grade teacher.
Price 60 Cents
THE PALMER COMPANY
120 Boylston Street Boston, Mass.

BARNES & NOBLE, Inc.
76 Fifth Avenue New York City
THE EDUCATIONAL BOOK-HOUSE
"Known in Every Continent"
offers in connection with Jobbing School-book business
A COMPLETE LIBRARY SERVICE
Write for information and Special Bargain Lists No. 31 for Elementary Schools, and No. 10S for Secondary Schools and Colleges.
ALL BOOKS OF ALL PUBLISHERS
For SCHOOLS, COLLEGES and LIBRARIES

WINSHIP TEACHERS' AGENCY

ALVIN F. PEASE, MANAGER
6 Beacon Street . . . . . Boston, Mass.
ESTABLISHED 1875
Prompt! Courteous! Fair!
Member National Association of Teachers' Agencies

Albany Teachers' Agency

Provides Schools of all grades with competent Teachers. Assists Teachers in obtaining positions.

Rooms 404-408, Spencer Trask Building
W. W. ANDREWS, President F. WAYLAND BAILEY, Secretary 74 CHAPEL STREET, ALBANY, N. Y.

KELLOGG'S TEACHERS' AGENCY

Established 1889
31 Union Square, New York, N. Y. (Broadway at 16th Street) Telephone Algonquin 1756 B. F. Mannion, Miss M. B. Gosman } Managers

We have been supplying teachers to the Public and Private Schools for over forty years. We have no branches. All applications for membership and all requests for teachers receive the personal attention of the managers. Call, write or telephone us for **careful personal service. Member National Association of Teachers' Agencies.**

Schermerhorn Teachers' Agency

Established 1855 *CHAS. W. MULFORD, Prop.*
366 FIFTH AVENUE, NEW YORK CITY BETWEEN 34th AND 35th STREETS
BRANCH OFFICES { 1836 EUCLID AVE., CLEVELAND, OHIO; 945 UNION TRUST BLDG., PITTSBURGH, PA.
A superior agency for superior people. We register only reliable candidates. Service free to school officials.

TEACHERS FOR SCHOOLS AND COLLEGES and SCHOOLS AND COLLEGES FOR TEACHERS

NATIONAL TEACHERS AGENCY

8 Branch Offices Philadelphia, Pa. D. H. Cook, Gen. Mgr.
TEACHERS SHOULD ENROLL NOW FOR MID-YEAR, SUMMER AND SEPTEMBER POSITIONS

ITHACA TEACHERS AGENCY

PERSONAL SERVICE. ENROLL NOW—NO FEE.
130 Blair Street **Ithaca, New York**
SCHOOL AUTHORITIES No Charge. Reliable Service.

W. S. FRY TEACHERS AGENCY

COMMONWEALTH BLDG., DENVER, COLORADO
Twentieth year placing teachers in Colleges and schools.
Superior teachers having higher degrees needed for exceptional positions.

THE FISK TEACHERS' AGENCIES

120 BOYLSTON STREET, BOSTON, MASS.

NEW YORK, 225 Fifth Ave. | PITTSBURGH, PA., 549 Union Trust Bldg. | KANSAS CITY, MO., 1020 McGee St.
SYRACUSE, N. Y., 139 Fage Avenue | BIRMINGHAM, ALA., 1140 So. 13th St. | PORTLAND, ORE., Journal Bldg.
PHILADELPHIA, PA., 1420 Chestnut St. | LOS ANGELES, 521 Brockman Bldg.

Send to any of the above addresses for Registration Form Free.

SEE ALSO BACK COVER OF THIS MAGAZINE.

Under New and Progressive Management

The Pratt Teachers' Agency

70 Fifth Avenue, New York

Member of National Association of Teachers' Agencies

Recommends teachers to colleges, public and private schools in every section of the United States

THE GRACE M. ABBOTT TEACHERS' AGENCY

120 Boylston Street, Boston

Formerly The Corlew Teachers' Agency

THE CARY TEACHERS' AGENCY

"THREE AGENCIES—ONE REGISTRATION"

Our business is done by *recommendation* in answer to *direct calls* from employers

C. WILBUR CARY, Manager, 49 Pearl Street, Hartford, Conn.
ROSE E. BRADBURY, Manager, 14 Beacon Street, Boston, Mass.
GEORGE H. LARRABEE, Manager, Clapp Memorial Bldg., Portland, Me.

REMOVAL

The TEACHERS EXCHANGE of BOSTON

AND TRUE W. WHITE, COUNSELOR

AFTER MAY THIRTIETH, WILL BE AT 6 PARK STREET, OVERLOOKING THE COMMON

In those rooms, with a wide choice of selected teachers, and with experienced attention to the problems of individual needs, there are prospects of increasing usefulness to parents and to college and school officials

PH. D's. NEEDED FOR COLLEGE POSITIONS

FREE REGISTRATION TO PH. D's.

OUR FIELD — ROCKY MT. TEACHERS' AGENCY — ENTIRE WEST

410 U. S. NATL. BANK BLDG. WILLIAM RUFFER, Ph. D., Mgr. DENVER, COLO. BRANCH OFFICE LUMBER EXCHANGE MINNEAPOLIS, MINN.

Largest Teachers Agency In The West

THE FICKETT TEACHERS' AGENCY

EIGHT BEACON STREET
BOSTON, MASS.

High School Work Our Specialty. Established 1885. Manual on Request.

MEMBER OF NATIONAL ASSOCIATION OF TEACHERS' AGENCIES

To those concerned with such phases of English teaching in the grades as
GRAMMAR, COMPOSITION, READING, SPEAKING, VOCABULARY AND SPELLING

To those concerned with such phases of elementary education as
SUPERVISION, TEACHER TRAINING

To those concerned with such problems as
SCHOOL LIBRARIES, CHILDREN'S LITERATURE

THE ELEMENTARY ENGLISH REVIEW

Offers Material of the Greatest Value

REPRESENTATIVE ARTICLES—RECENT AND FORTHCOMING:

Teaching the Mentally Superior Child and the Mentally Retarded Child Creative Writing. Minnie Rosenbloum, Birmingham, Alabama.

The Arguments For and Against Homogeneous Grouping. Alonzo G. Grace, University of Rochester, Rochester, New York.

Some Aspects of Oral Reading in the Primary Grades. Annie E. Moore, Teachers College, Columbia University, New York City.

Early American Writers for Children: Part III. Lydia E. Sigourney. Bert Roller, George Peabody College for Teachers, Nashville, Tennessee.

Under the auspices of the Book Evaluation Committee of the American Library Association:—Lewis Carroll, Friend of Children, 1832-1932, by Elizabeth D. Briggs, Cleveland Public Library; Ohio River Valley in Song and Story, by Miriam Wadsworth, Toledo Public Library, Toledo; Poetry for Children, by Mildred P. Harrington, Library, Louisiana State University.

Special Numbers: March—Grammar and the Mechanics of Writing; April—Silent and Oral Reading; June—Recreational Reading for Children.

THE ELEMENTARY ENGLISH REVIEW

4070 VICKSBURG AVE. C. C. CERTAIN, Editor DETROIT, MICHIGAN

Bound for Permanent Reference in the Large Teachers College and University Libraries
Indexed in The Educational Index
Official Organ of The National Council of Teachers of English

Two Dollars and Fifty Cents a Year

PATTERSON'S TESTS ON THE FEDERAL CONSTITUTION

By RAYMOND G. PATTERSON, *State Normal School, Westfield, Mass.*

This series of three of the "New Type" tests is designed to give the teacher a convenient, accurate, and scientific means of measuring results; to simplify and expedite the teaching; also, to furnish the pupil with stimulating exercises yielding a more thorough knowledge of the Constitution.

Form A, Fundamental Fact Test, is to measure the student's knowledge of the basic facts of the Constitution.

Form B, Completion Test, is to be answered with the exact words of the Constitution.

Form C, Mathematical Test (the mathematics of the Constitution), is answered with figures or dates.

Prices

Two cents per test, minimum order 20 cents, $1.80 per hundred.
Sample set for 20 cents.

PATTERSON'S TESTS ON THE DECLARATION OF INDEPENDENCE

By RAYMOND G. PATTERSON

This test-exercise may be used for testing or as a guide in the study of the Declaration of Independence.

Specimen set 20c. *Cost in quantity only* $2.00 *per hundred pupils.*

THE PALMER COMPANY 120 Boylston Street Boston, Mass.

The Fisk Teachers' Agencies

FOUNDED BY EVERETT O. FISK, 1884

WE AIM TO FILL EDUCATIONAL POSITIONS OF ALL KINDS EVERYWHERE

OUR headquarters in Boston have a commanding advantage in location for a Teachers' Agency, as Massachusetts, with less than one-tenth the area of Minnesota, has thirty high grade Colleges, Universities and Normal Schools, more than any other corresponding area in the world, ten institutions of College and University grade being located within a half dozen miles of the State House, including Harvard, Northeastern and Boston Universities, Massachusetts Institute of Technology, Tufts, Boston, Radcliffe, Jackson, Simmons and Immanuel Colleges.

The Fisk Agencies located in the leading cities of America are independent in their local management, whose managers are authorized by Everett O. Fisk & Co., a Massachusetts corporation, to use their trade name, "The Fisk Teachers' Agency," and a uniform registration blank and other standardized material.

The Contract with the managers of each office provides that they "shall be proprietors of the office as solely responsible for the local management, but subject to the Everett O. Fisk & Co., so far as their advertising, printing, and relationships of their office to other Fisk Agencies are concerned," thus providing as in our National and State Governments, or as in the case of the British Empire and her provinces, for general harmony for usage and helpful interrelationship with local control.

Our patrons will usually find it to their convenience and advantage to patronize the Fisk Agency nearest to them, but are perfectly free to deal with any other Fisk Agency if personal acquaintance with the manager or supposed greater efficiency of the Agency suggests other preference.

We have placed teachers in every state in the Union, seven Provinces of Canada, also in Alaska, Mexico, Cuba, Haiti, Jamaica, Porto Rico, Ecuador, Peru, Chile, Brazil, England, France, Italy, Germany, Turkey, Singapore, China, Liberia, Rhodesia, the Hawaiian Islands and the Philippines.

Send to any of the addresses below for Circular and Registration Form

BOSTON, MASS., 120 Boylston St.
NEW YORK, N. Y., 225 Fifth Ave.
SYRACUSE, N. Y., 139 Fage Ave.
PHILADELPHIA, PA., 1420 Chestnut St.
PITTSBURGH, PA., 549 Union Trust Bldg.
BIRMINGHAM, ALA., 1140 So. 13th St.
KANSAS CITY, MO., 1020 McGee St.
PORTLAND, ORE., Journal Bldg.
LOS ANGELES, CAL., 521 Brockman Bldg.